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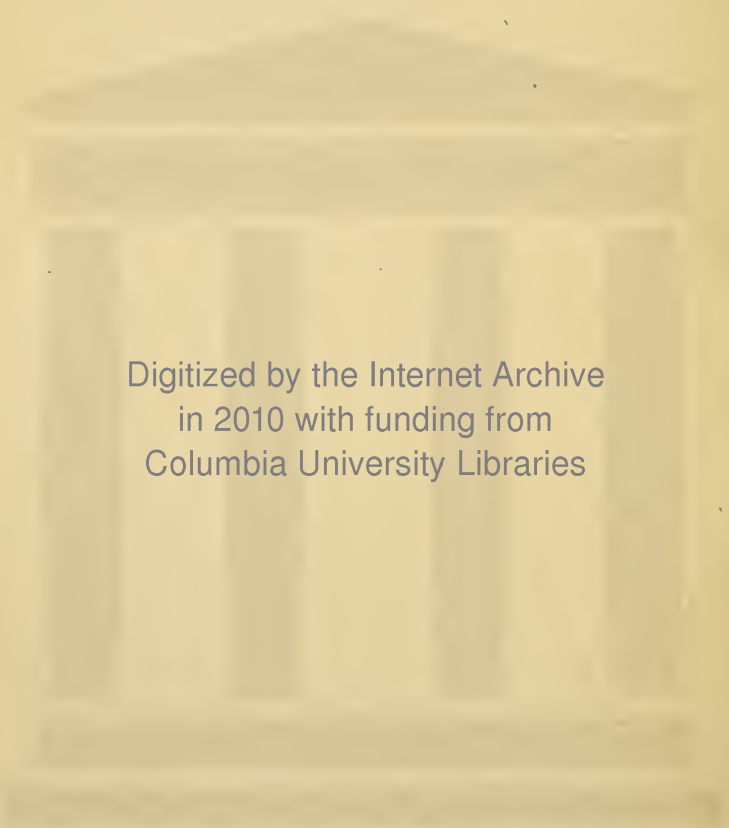
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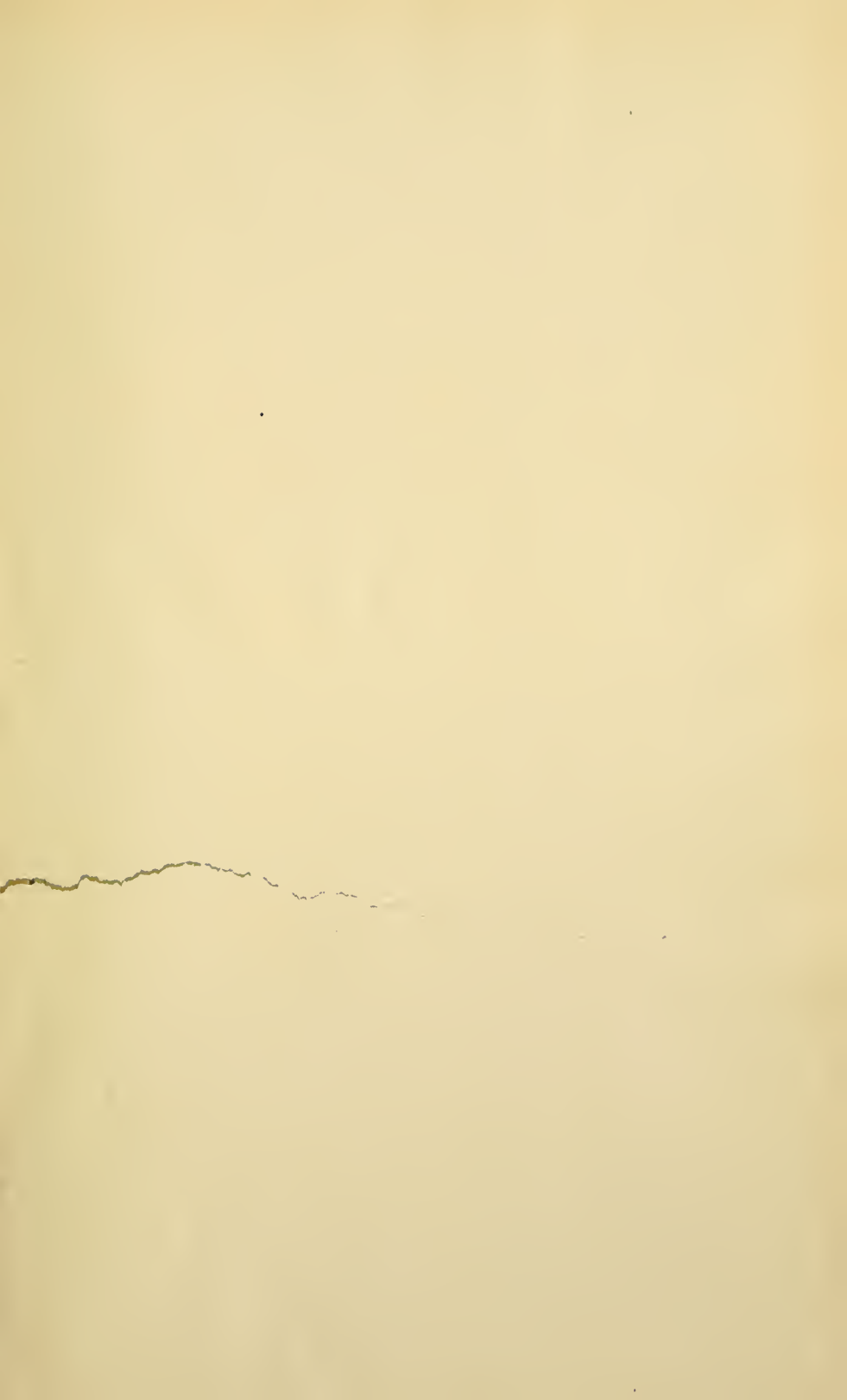


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FIFTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH,

OF THE

STATE OF KANSAS,

FROM

JANUARY 1, 1889, AND ENDING DECEMBER 31, 1889.

---

TOPEKA.

KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.

1890.



# FIFTH ANNUAL REPORT

RECEIVED  
CLIFFORD C. BAKER  
1890

OF THE

## STATE BOARD OF HEALTH,

OF THE

COMPLIMENTS OF

THE KANSAS STATE BOARD OF HEALTH.

J. W. REDDEN, M. D., Secretary,

715 Kansas Avenue, Topeka.

Please acknowledge receipt.

JANUARY 1, 1889, AND ENDING DECEMBER 31, 1889.

TOPEKA.

KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.

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KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.  
1890.

## MEMBERS OF THE BOARD.

---

H. D. HILL, M. D.	Augusta	Term expires March 28, 1891.
FRANK SWALLOW, M. D.	Valley Falls	Term expires March 28, 1891.
J. W. JENNEY, M. D.	Salina	Term expires March 28, 1891.
ROBERT C. MUSGRAVE, M. D.	Grenola	Term expires March 28, 1892.
R. A. WILLIAMS, M. D.	Olathe	Term expires March 28, 1892.
W. L. SCHENCK, M. D.	Osage City	Term expires March 28, 1892.
G. H. T. JOHNSON, M. D., PRESIDENT.	Atchison	Term expires March 28, 1893.
D. C. JONES, M. D.	Topeka	Term expires March 28, 1893.
J. MILTON WELCH, M. D.	Wichita	Term expires March 28, 1893.

SECRETARY, J. W. REDDEN, M. D., Topeka.



## COUNTY HEALTH OFFICERS.

The following is a list of the County Health Officers, and their post-office address, in the various counties in the State:

COUNTIES.	TOWNS.	HEALTH OFFICERS.
Anderson .....	Garnett.....	John A. Henning, M. D.
Barber.....	Medicine Lodge.....	L. B. Gillette, M. D.
Barton.....	Great Bend .....	S. J. Shaw, M. D.
Bourbon.....	Fort Scott.....	R. Aikman, M. D.
Brown.....	Hawatha.....	W. W. Nye, M. D.
Butler.....	Eldorado.....	J. A. McKenzie, M. D.
Chase .....	Cottonwood Falls .....	C. E. Hait, M. D.
Chautauqua.....	Sedan.....	Daniel L. Gray, M. D.
Cheyenne.....	St. Francis.....	F. K. Dabney, M. D.
Clark .....	Ashland .....	H. S. Parks, M. D.
Clay .....	Clay Center.....	S. E. Reynolds, M. D.
Cloud .....	Concordia.....	L. D. Hall, M. D.
Coffey.....	Burlington.....	Wm. Manson, M. D.
Comanche.....	Coldwater.....	John S. Holliday, M. D.
Cowley.....	Winfield.....	George Emerson, M. D.
Crawford.....	Girard .....	Wm. H. Warner, M. D.
Decatur.....	Oberlin.....	A. W. Bariteau, M. D.
Douglas.....	Lawrence.....	N. Simmons, M. D.
Edwards.....	Kinsley.....	B. R. Mosher, M. D.
Elk .....	Grenola.....	R. C. Musgrave, M. D.
Ellis.....	Hays City.....	Hugo B. Kohl, M. D.
Ellsworth.....	Ellsworth.....	Robert L. Doig, M. D.
Finney.....	Garden City.....	George L. Neal, M. D.
Ford.....	Dodge City.....	T. L. McCarty, M. D.
Garfield.....	Ravanna.....	Henry C. Suess, M. D.
Geary.....	Junction City.....	P. Dougherty, M. D.
Graham.....	Hill City.....	B. P. Williamson, M. D.
Greeley .....	Tribune.....	F. C. Moore, M. D.
Greenwood.....	Eureka.....	A. T. Higgins, M. D.
Hamilton.....	Syracuse .....	R. C. Dryden, M. D.
Harper.....	Harper.....	W. G. Muir, M. D.
Harvey.....	Newton.....	T. M. Coleman, M. D.
Haskell.....	Santa Fe.....	W. T. Mills, M. D.
Hodgeman.....	Jetmore.....	J. K. Miller, M. D.
Jewell.....	Mankato.....	Walter Crew, M. D.
Johnson.....	Olathe.....	C. G. McKinley, M. D.
Kearny.....	Lakin.....	C. C. Lovin, M. D.
Kingman.....	Kingman.....	E. W. Hinton, M. D.
Labette.....	Oswego.....	E. E. Liggett, M. D.
Lane.....	Dighton.....	F. L. Rownd, M. D.
Lincoln.....	Lincoln.....	Henry M. Hall, M. D.
Linn.....	Mound City.....	Ira E. Coe, M. D.
Logan.....	Oakley.....	W. H. Keeney, M. D.
Lyon.....	Emporia.....	R. W. McCandless, M. D.
Marion.....	Peabody .....	C. A. Loose, M. D.
Marshall.....	Waterville.....	H. Humfreville, M. D.
McPherson.....	McPherson.....	J. E. Rouze, M. D.
Meade.....	Meade Center.....	C. Button, M. D.
Miami.....	Fontana .....	Geo. W. Robinson, M. D.

## COUNTY HEALTH OFFICERS — CONCLUDED.

COUNTIES.	TOWNS.	HEALTH OFFICERS.
Mitchell.....	Beloit.....	C. H. Guilbor, M. D.
Montgomery.....	Elk City.....	John T. Davis, M. D.
Morris.....	Council Grove.....	Z. T. Harvey, M. D.
Morton.....	Richfield.....	L. C. Bowers, M. D.
Nemaha.....	Centralia.....	A. J. Best, M. D.
Ness.....	Ness City.....	J. N. Venard, M. D.
Norton.....	Norton.....	E. M. Turner, M. D.
Osage.....	Burlingame.....	James Haller, M. D.
Osborne.....	Osborne.....	B. F. Chilcott, M. D.
Ottawa.....	Minneapolis.....	John Miller, M. D.
Pawnee.....	Larned.....	J. M. Cummins, M. D.
Phillips.....	Marvin.....	I. Miley, M. D.
Pottawatomie.....	Westmoreland.....	J. S. Spangler, M. D.
Pratt.....	Pratt.....	Thomas McElvain.
Rawlins.....	Ludell.....	J. L. Constable, M. D.
Reno.....	Hutchinson.....	S. H. Sidlinger, M. D.
Rice.....	Lyons.....	N. F. Terry, M. D.
Rooks.....	Stockton.....	L. B. Powell, M. D.
Rush.....	La Crosse.....	Wm. Goodwin, M. D.
Russell.....	Russell.....	J. W. Long, M. D.
Saline.....	Salina.....	J. W. Jenney, M. D.
Scott.....	Scott City.....	Joseph F. Bond, M. D.
Sedgwick.....	Wichita.....	E. B. Rentz, M. D.
Shawnee.....	Topeka.....	W. A. Williamson, M. D.
Sheridan.....	Hoxie.....	D. M. Freeman, M. D.
Sherman.....	Goodland.....	M. A. Rush, M. D.
Smith.....	Smith Center.....	O. P. Daly, M. D.
Stafford.....	St. John.....	C. M. Maxfield, M. D.
Stanton.....	Gognac.....	C. A. Culver, M. D.
Stevens.....	Hugoton.....	A. L. Holloway, M. D.
Sumner.....	Wellington.....	W. O. Barnett, M. D.
Thomas.....	Colby.....	V. C. Eddy, M. D.
Wabaunsee.....	Alma.....	E. W. Eldridge, M. D.
Wallace.....	Wallace.....	J. N. Page, M. D.
Washington.....	Washington.....	Chas. Williamson, M. D.
Wichita.....	Coronado.....	A. R. Knapp, M. D.
Wilson.....	Fredonia.....	F. M. Wiley, M. D.
Woodson.....	Yates Center.....	E. K. Kellenberger, M. D.

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# REPORT OF THE BOARD.

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## PREFACE.

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KANSAS STATE BOARD OF HEALTH,  
OFFICE OF THE SECRETARY, TOPEKA, KAS., Jan. 1, 1890.

*To Hon. Lyman U. Humphrey, Governor:*

SIR—In compliance with the eleventh section of the act to create and establish a State and local boards of health in the State of Kansas, approved March 7th, 1885, I have the honor to submit to you the accompanying report for the year 1889.

Very respectfully,

J. W. REDDEN, M.D., *Secretary.*

---

WE herewith submit the Fifth Annual Report of the Kansas State Board of Health.

### EXAMINATION OF REPORTS.

A candid and thorough examination of the five annual reports which have been issued by this Board, will give the reader an approximate idea of the labors rendered, and results secured by the State and County Boards of Health during that period. We therefore urge every person who may have access to these reports to read them critically, with the view of ascertaining what progress has been made, what measures enforced and what advancement has been attained in sanitary knowledge and science.

### DEATH-RATE LOWERED AND LIFE PROLONGED.

Sir Spencer Wells, in his inaugural address, delivered in October, 1886, before the Sanitary Congress, claimed that fifty years ago the duration of life in Great Britain was about thirty years. Now, according to the health life-table, it is forty-nine years, a gain of nineteen years! It is certainly fair to conclude, with him, that a very large share of the credit for this



very remarkable result is directly due to *sanitary work*. What is true in this respect in Great Britain, is equally true in America, and in Kansas.

#### STATE AND COUNTY HEALTH BOARDS.

At the present time there are more county health boards in the State than ever before; and they are rendering efficient and valuable services to the State in all departments of sanitary science, in the prevention of disease, and the suppression of epidemics. Most of them have been in continual service for the past five years, laboring faithfully for the welfare of the people, and with but little remuneration. In fact, many of them receive no compensation, except the conscious assurance that their labors will be of incalculable benefit to their fellow-men, in the prevention of many of the "ills that flesh is heir to." Neither do they receive that cordial coöperation and assistance from the people which they should. Every person should have personal interest in preventing an epidemic, and in lending a helping hand to the afflicted family, or the local board of health, when needed. We regret to say, that in far too many cases difficulties are thrown about the local health officer, and obstacles placed in his way by the people whose interest he is laboring to serve.

In many communities the local health officer is looked upon as a needless and expensive luxury—expensive even if his salary does not cover half of his expenses, and needless because fogies cannot crawl out of their ruts, and "smart" people know more than doctors. They do not labor with the health officer, even to prevent an epidemic from contagious diseases already present. They refuse to submit to notification, and will not permit isolation unless compelled to. It is difficult to suppose that this results from ignorance, for the dangers of such diseases and their communicability are well known to all. Neither can we believe that it results from a malicious purpose to spread contagion. It is the result of carelessness, and a reckless disregard of the public welfare that is akin to selfishness. From this much evil results; and about the greatest difficulties the health officer meets with, come from the people for whose welfare he often gives his services without thought of compensation. As a general rule he labors without funds, without legal powers, without aid, and without sympathy.

Experience has demonstrated beyond question, that the most effective sanitary work for an entire State can best be accomplished by having a local board of health in each county, city and village, and all working

harmoniously together under the general direction of the State Board. A central head at the capital, with all these organizations in connection with it, is so in keeping with the genius of our Government, and so far-reaching in its sphere of activity, as to be hardly susceptible of improvement.

A perfect organization of this kind will always be prepared, not only to act promptly and concertedly in suppressing exotic epidemic diseases which may gain entrance into our State, but to regulate and control the many conditions adverse to health, which are constant factors of advancing civilization. The State Board, by being in constant communication with local boards, will be able to learn of outbreaks of dangerous contagious diseases in any part of the State, and to notify adjacent communities of their danger therefrom. Through such organizations it can also make collections of facts regarding preventable diseases, which can be returned to these boards in shape to be used in their better prevention.

We hope that every county will remember, and not stingily and begrudgingly, the men who have stood on guard as a local board of health, and who, whether there have been outbreaks of infectious diseases to contend with or not, or nuisances to abate or not, have been ready for emergencies, and have had the trouble of meeting for organization, and of reporting to the State Board of Health, if they have done so, as most have. Many of these workers for the public, whom we have never met, we have come to know as faithful and efficient officers, and their counties would be fortunate indeed in having their services at much higher prices than they have been getting.

#### PUBLIC HEALTH, AND VIGILANCE.

While the past year has been one remarkable for the general good-health of the people, and for the comparative freedom from epidemics, it is attributable in a great degree to the efficient services of the State, county, and city boards of health, and we would urge the faithful continuance of the good work. We desire to *emphasize* the following plea for public health, from the pen of Dr. H. B. Baker, of Michigan, who is one of the leading sanitarians of America. He says:

“When a fire breaks out in a city or village, every person considers it a duty to give a general alarm, and especially prompt notice of it to the fire department; and all citizens coöperate for the speedy extinction of the fire. If this were not done, the *property* in the city or village would be quite generally endangered by the possible spread of the fire. Why is it that when a dangerous communicable disease breaks out, one which may spread and endanger quite generally the *lives* of persons in the village, there is, so frequently, no such general alarm and prompt notice to a well-organized department of the village government, and no general coöperation

for the extinction of the disease? Is not a person's life of more consequence than his property? Is not the saving of the *lives* of their children of as much consequence to the inhabitants of the village as the saving of their *property*? If each person were forced to answer this question, relative to his own children, I believe that he would feel like a degraded, miserly wretch if he did not promptly sacrifice his property in defense of the life of his child. Yet, collectively, the citizens generally do *not* do for the protection of *life* what they do for the protection of *property*—they do not maintain a well-organized health department so generally as they do a well-organized fire department. I believe it is because they do not so generally know that lives may be saved by well-organized health departments, or because they do not know the value of human life to the community."

#### DANGER FROM USING HAY IN STREET CARS.

Attention to the public health and hygiene should be considered the duty of the State, no less than that of police supervision. Sources of infection should be removed, or, when that is not possible, their evil lessened, just as much as dangerous individuals are removed. Accordingly we desire to call the attention of health officers to the importance of a strict sanitary control of public conveyances. This is particularly necessary in the case of street and steam cars, into which passengers are crowded like cattle. These vehicles are imperfectly ventilated, often overheated, their floors exposed to the expectorations of diseased as well as unclean passengers, and hence their occupants are compelled to respire an atmosphere laden with deadly possibilities.

Dr. Taylor, Medical Inspector of Philadelphia, has made a pertinent report, which we commend to the perusal of all health boards. He says:

"I have investigated the complaint about the use of swamp hay in the cars of one of the passenger railway companies, and find that, during wet weather, the hay becomes saturated with water and loaded with the expectorations from scores of tobacco-chewers, the sputa from tuberculous lungs, and street filth from passengers' shoes. The moist exhalations from this mass of filth are pernicious and prejudicial to public health. If this hay is dried and used again, the dust that is given off from the movements of the passengers finds lodgment in many delicate mucous membranes."

Such a practice is most reprehensible, and not confined to the City of Brotherly Love. Hay is still to be found in many of the street and steam motor cars, in the cities and towns of Kansas. The city and county health officials should attend to this matter without delay.

#### SMALL-POX, SCARLET FEVER, DIPHTHERIA, AND TYPHOID FEVER.

The following facts and statistics, presented by Dr. Baker, Secretary of the Michigan State Board of Health, are well worthy of careful examina-



tion and thoughtful study. They show the practical benefit of State Boards of Health:

"The record of the great saving of human life and health in Michigan in recent years is one to which, it seems to me, the State and local boards of health in Michigan can justly 'point with pride.' It is a record of the saving of over one hundred lives per year from small-pox, four hundred lives per year saved from death by scarlet fever, and nearly six hundred lives per year saved from death by diphtheria—an aggregate of eleven hundred lives per year, or three lives per day, saved from these three diseases! This is a record which we ask to have examined, and which we are willing to have compared with that of the man who 'made two blades of grass grow where only one grew before.'"

Equally true and valuable are the results from the labors of the State and county health officers in Kansas, in the record of the prevention and suppression of epidemics, the saving of lives, and guarding the public health, during the past five years, from the ravages and destruction resulting from small-pox, diphtheria, scarlet fever, and typhoid fever—those four pestilential and fatal, but preventable, diseases.

In consequence of the law being so lame and defective, we have not been able to collect and compile the vital statistics to such an extent as to render them very valuable; yet enough has been gathered to confirm these statements.

Take the history of small-pox alone in Kansas during the year 1889: upon the examination of the tabulated statistics, and special reports as found printed in this volume, you will find that this disease was introduced into this State from the States of Missouri, Colorado, California and Nebraska, and from the Territories of Arizona and New Mexico; and the contagion then spread to the other counties, until 21 counties were invaded by this loathsome disease, resulting in 387 cases and 15 deaths; a very remarkable low death-rate of less than 4 per cent. This result is attributable chiefly and directly to the prompt and efficient measures adopted, and thoroughly enforced by the energy and vigilance of the county and State boards of health. It is not only remarkable, but perhaps unparalleled. Notwithstanding that all types and varieties of the disease prevailed, among all classes of people, of all ages, sexes, colors, conditions, nationalities, and habits of life; in cities, towns, villages, and rural districts; in mines and boarding-houses, in mansions, cottages and shanties, we can record this low death-rate as an enduring monument to the utility and value of the State, county and city health boards; and it is an undeniable argument of the efficiency and benefits resulting from thorough and rigid quarantine, isolation, vaccination, and disinfection. The health boards have secured great immunity

from this plague by the general vaccination of all classes of people throughout the State, resulting from the efforts of the health officers. Still greater results would have been obtained had the law authorized the State and county health boards to have universally enforced the rules and regulations, by rendering their orders compulsory under penal enactments.

Notwithstanding the obstacles and opposition the health officers have encountered, they have made such wonderful progress in this line of beneficence that not a single case of small-pox, throughout the entire State, has been reported to the State Board of Health up to this date, while at this time last year it had entered the homes of hundreds of cheerful hearthstones, called away loved ones, and disfigured scores of persons for life. What a startling contrast! Firesides protected! Lives saved! Suffering averted! Health preserved! The treasures of years kept intact! Business prospered! Panics prevented! Homes rendered happy and unbroken! Can anyone be so prejudiced as for a moment to doubt that the few hundred dollars annually appropriated for the past five years for guarding the *health interests of the State* is not a *wise, judicious, and necessary provision*, yielding a *revenue* in return that can *never be estimated* by a per centum of *material wealth*?

What has been said in reference to small-pox, is equally true and just as applicable to scarlet fever, diphtheria, typhoid fever, and other contagious diseases so prevalent throughout our commonwealth. Bearing directly upon this subject, we would call attention to the following: Information was received, a few days since, that a typhoid-fever epidemic had broken out in a college. One student had died; a great many others were seriously ill, and one of the professors dangerously so. What was the cause of this? Why, the origin of the trouble has been traced by the *health authorities* to *defective sewerage* in the main college building, which is being remedied as fast as possible.

This is but one of hundreds of similar services that have been rendered by the county health boards in our State, under the jurisdiction and direction of the State Board of Health, in controlling and suppressing, and even preventing epidemics of this and other contagious diseases.

#### THE BEST INVESTMENT.

Take another illustration: Sanitary science of late years has received increased attention in Brussels. The results are indeed encouraging. From 1868 to 1888 the annual average number of cases of nuisance removed,

sanitary improvements made, or premises disinfected, increased from 757 to 2,146, and as the amount of sanitary work increased the general death-rate gradually decreased from 29.3 in 1,000 population, in 1868, to 22.9, in 1888; and the deaths from zymotic diseases have come down from 4.60 to 1.31 in the same time. As was stated at the International Congress of Hygiene, the Brussels Sanitary Bureau costs 48,000 francs a year; and if we estimate every life saved at only £40 (\$200), this outlay in sanitary administration is equal to an investment bringing in an annual interest of 1,400 per cent. Equally valuable and commendable are the results accomplished by the labors, and measures enforced by the health boards of our State.

#### PRECIOUS CAPITAL.

At the opening of the Sanitary Congress, at Vienna, Prince Rudolph used this language:

“Man is the most precious capital of the State, and of society in general. Every individual represents a certain value. To preserve this as intact as possible to its farthest limit, is not only a command of humanity, but also the duty of every community and state in their own interest.”

These words of wisdom should be engraven upon every gateway; impressed upon every family; inscribed upon every heart. Then would true prosperity everywhere abound, material wealth flow like the rivers of water, and our nation soon become full of physical, intellectual, and moral giants. In neglecting and ignoring sanitary precepts and preventive measures, fearful responsibilities rest somewhere, and upon some authorities.

#### RESPONSIBILITY.

Dr. Balinson, of North Carolina, writes with much force and directness, as follows:

“The moral aspect of sanitation has been incidentally touched upon. If I point a loaded pistol at a fellow-man, and pull the trigger, I commit a murder. If I knowingly allow that man to be exposed to a disease which takes his life, am I innocent of his death? Human law may exonerate me, but how can I plead at the bar of God and my own conscience? The laws of life and health are plain and simple. They are the laws of God; we know them; happy are we if we do them. The time has come in modern civilization when ignorance and indifference cannot be pleaded in excuse for neglecting the enactment and enforcement of sanitary laws.

“In ghastly mockery of the words of hope and resignation graven on the tombstones of our loved ones, who have succumbed to preventable diseases, we see, standing out in letters of fire, which should scorch and sear our consciences: ‘Strangled by filth!’ ‘Killed by willful ignorance and neglect!’

“The deaths from preventable diseases in this State are simply murders, and we

are left to decide in how far each of us is answerable to the just Judge of all, for the crime.

"The ignorance and indifference, the fatal blunders of the past, cannot be remedied; we cannot recall the dead; but if to-day we mend our ways and heed the sanitary demands of the living, our loved and lost ones will not have suffered and died in vain."

#### PLUMBING, VENTILATION, WATER.

Never before in the history of our State has as much been done in the way of securing better plumbing, better ventilation, and a more thorough enforcement of proper sanitary measures in the construction of private and public buildings. Never before has so much attention been paid to the purity of the water-supplies, the investigation of the causes of disease, and the adoption of efficient measures for their removal. These results are attributable very largely to the organization, influence and efforts of the State Board of Health.

#### THE STATE PRESS—EDUCATION.

During the past five years we have made wonderful progress in sanitary reforms through educational channels, by means of circulars, pamphlets, reports, and other publications, freely and gratuitously distributed, and published very generally in every county throughout the State; so that the people absolutely know more than ever before about preventable diseases, their restriction, management, and prevention—knowledge that is of incalculable benefit to individuals, families, and communities. Too much praise and credit cannot be given to the *press* throughout the State for its willingness and readiness, at all times and under all circumstances, to publish and circulate all information and literature requested, for the benefit of the people. It has been the right hand of power to the State Board of Health in disseminating and educating thousands of people who could not otherwise have been reached. All this has been cheerfully rendered; and that, too, without any pecuniary remuneration, but in the spirit of the "Good Samaritan."

#### LEGISLATION.

Two duties are plainly marked out for the consideration of the next Legislature. One is, that it provide greater and more specific power and authority for the State Board of Health, so that it can be able to abate or remove any and all nuisances; enforce its rules and regulations for the restriction and prevention of contagious and pestilential diseases, as well as promptly and effectually enforce quarantine when necessary for the protec-



tion of the public health. To do this, it will be necessary to amend the present law; or, what would be preferable, enact a new law that would give such power and authority as is possessed and exercised by such States as Massachusetts and Michigan, which head the column of States for utility and beneficence in all measures of sanitary reform and preventive medicine.

*Secondly.* The support given the State Board of Health by the legislative department is not adequate to the duties required of it, but cripples their efforts and detracts from their value. Careful examination of our annual reports should arouse public sentiment, and popularize the services of health officers, whose value to public *health* should secure for them the first and highest consideration of the State.

It seems difficult for our law-makers to understand that every measure for promoting health is as important as health itself. Their failure to act in such matters must be attributable to ignorance, a reckless indifference, political demagogery, or a malicious intent to expose the people to preventable disease. We can imagine no other reason, and the existence of such inadequate laws is a reflection upon the intelligence and integrity of State legislation. One embarrassment, and a very serious one, that confronts the Board of Health, is the appropriation made by the State. This was but \$4,500 per annum for the first four years, and by a clerical error it was reduced to \$3,500 per annum for the present and the next fiscal year, and it is utterly impossible for any board of health to render the services that should be rendered to such a State as Kansas with so small an amount. By such inadequate financial aid the services of the Board are necessarily limited, and it is made to bear the blame that should attach to the power creating the Board.

#### EMERGENCY FUND.

We are liable at any time to be invaded from other States or countries with plagues, or pestilential diseases, that will create panics, paralyze business, check immigration, and interrupt all departments of industry. We have no provision or preparation to meet such an emergency. Let us not forget the *Johnstown flood*, the fatal epidemic of *typhoid fever in Plymouth (Pa.)*, the *yellow fever in Memphis*, and the *cholera in Chicago*. The experience of the Pennsylvania State Board of Health, in a great and sudden calamity, should teach our State that sudden perils may arise at any time, demanding the immediate expenditure of large sums of money. In order that there should be no dangerous delays at such times, a liberal contingent

fund should be placed at the disposal of the State Board of Health, to be used, subject to the approval of the Governor. We respectfully, but urgently, suggest that this be done by the next Legislature.

#### SANITARY CONVENTIONS.

We earnestly invite careful consideration and study of the proceedings and addresses of the State Sanitary Convention, printed as an appendix to this report. All the addresses are of a high order, very instructive, and replete with valuable information. These conventions have been regularly growing in importance and value, as the large and appreciative audiences attest. They are valuable factors as educators and instructors. No one can read these addresses without being profited and instructed in sanitary science and preventive medicine.

#### MEETINGS OF THE BOARD.

During the five years of the existence of the State Board of Health, there has never been a regular quarterly or called meeting without a quorum being present for the transaction of business. Every member has shown a personal and abiding interest in the development and perpetuity of the Board. Harmony, good-will and progressiveness have characterized all its deliberations, and all have labored unitedly for the best interests of the people in promoting sanitary science, and establishing preventive medicine.

#### CONCLUSION.

In conclusion, we would *emphasize* the following graphic and beautiful truths, so aptly written, by one of America's greatest surgeons and benefactors, the late Prof. S. D. Gross:

"The great question of the day is not this operation or that, not ovariectomy or lithotomy, or hip-joint amputation, which have reflected so much glory upon American medicine, but preventive medicine, the hygiene of our persons, our dwellings, our streets—in a word, our surroundings, whatever or wherever they may be, whether in city, town, hamlet, or country; and the establishment of efficient town, county, and State boards of health, through whose agency we shall be more able to prevent the origin and fatal effects of what are known as the zymotic or preventable diseases which carry so much woe and sorrow into our families, and often sweep like hurricanes over the earth, destroying millions of human lives in an incredibly short time. The day has arrived when people must be aroused to a deeper and more earnest sense of the people's welfare, and suitable measures adopted for the protection as well as for the better development of the physical, moral, and intellectual powers. This is the great problem of the day; the question which you as representatives of the rising generation of physicians should urge in season and out of season, upon the attention of your fellow-citizens; the question which above and

beyond all others should engage your most serious thoughts, and elicit your most earnest coöperation. When this great object shall be attained, when man shall be able to *prevent* disease, and to reach with little or no suffering his *three-score years and ten* so graphically described by the Psalmist, *then*, and not till then, will the world be a *paradise*."

Very respectfully,

J. W. REDDEN, M. D., *Secretary*.

G. H. T. JOHNSON, M. D., *President*.

D. C. JONES, M. D.

J. MILTON WELCH, M. D.

H. D. HILL, M. D.

FRANK SWALLOW, M. D.

R. C. MUSGRAVE, M. D.

R. A. WILLIAMS, M. D.

W. L. SCHENCK, M. D.

J. W. JENNEY, M. D.





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PART II.

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## SECRETARY'S REPORT.

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I HAVE the honor as well as the pleasure of presenting the following as the Fifth Annual Report of the State Board of Health. In the arrangement and composition a similar plan has been adopted as in the preceding reports, presenting only those subjects which are of more permanent value and interest, and omitting the minor details of work and correspondence, which are of only passing interest.

The following changes have been made in the membership of the State Board of Health since the last report was issued: H. D. Hill, M. D., of Augusta, was appointed last March, in place of C. H. Guibor, M. D., of Beloit; Frank Swallow, M. D., of Valley Falls, in place of D. Surber, M. D., of Perry; R. C. Musgrave, M. D., of Grenola, in place of H. S. Roberts, M. D., of Manhattan; and R. A. Williams, M. D., of Olathe, in place of J. F. Lewis, M. D., of Howard.

The names and addresses of the members of the Board, with the dates at which their terms of office expire, are as follows:

G. H. T. Johnson, M. D., President.....	Atchison.....	Term expires March 28, 1890.
D. C. Jones, M. D.....	Topeka.....	Term expires March 28, 1890.
J. Milton Welch, M. D.....	Wichita.....	Term expires March 28, 1890.
H. D. Hill, M. D.....	Augusta.....	Term expires March 28, 1891.
Frank Swallow, M. D.....	Valley Falls.....	Term expires March 28, 1891.
J. W. Jenney, M. D.....	Salina.....	Term expires March 28, 1891.
Robert C. Musgrave, M. D.....	Grenola.....	Term expires March 28, 1892.
R. A. Williams, M. D.....	Olathe.....	Term expires March 28, 1892.
W. L. Schenck, M. D.....	Osage City.....	Term expires March 28, 1892.
J. W. Redden, M. D.....	Topeka.....	Secretary.

The President appointed the following standing committees for the year:

### STANDING COMMITTEES.

*Legislation, Revision of Rules and Regulations, and Library*—H. D. Hill, M. D.

*Hygiene of Occupations, and Railway Sanitation*—W. L. Schenck, M. D.

*Epidemic and Endemic Diseases, and Quarantine*—R. A. Williams, M. D.

*Topography, Meteorology, and Hygiene of Public Institutions*—D. C. Jones, M. D.

*Water Sources, Sewerage, Drainage, and Disposal of Substances Injurious to Health*—J. Milton Welch, M. D.

*Especial Sources of Danger to Life and Health*—Frank Swallow, M. D.

*Adulteration of Food, Drinks and Drugs*—R. C. Musgrave, M. D.

*Heating, Ventilation, Lighting and Hygiene of Schools*—J. W. Jenney, M. D.

*Vital Statistics, Registration, Meteorological Service, and Nomenclature*—  
J. W. Redden, M. D.

*Finance*—D. C. Jones, M. D., Frank Swallow, M. D., and J. Milton Welch, M. D.

*Executive*—G. H. T. Johnson, M. D., D. C. Jones, M. D., and H. D. Hill, M. D.

## ABSTRACTS AND BRIEF ACCOUNTS

OF THE PROCEEDINGS AT MEETINGS OF THE STATE BOARD OF HEALTH DURING THE  
YEAR ENDING DECEMBER 31, 1889.

## SPECIAL MEETING.

TOPEKA, KAS., January 16, 1889.

There was a called meeting of the State Board of Health, at the request of the Executive Committee, which was held at the office of the Secretary, in the city of Topeka, on Wednesday, January 16, at 4 P.M. Present: Drs. Johnson, Welch, Jones, Surber, and Jenney.

The object of the meeting was to discuss and suggest such measures as were thought best, and prepare and submit to the Legislature a supplemental bill which would confer full and complete power and authority upon the State and county boards of health, and which would enforce under penalty all necessary rules and regulations in sanitary matters for the prevention, regulation and suppression of epidemic, contagious and pestilential diseases, check the spread of epidemics, regulate the construction and discharge of sewers, protect the purity of running streams, and generally promote the health of the people; and to use all possible influence and measures to secure its passage by the Legislature.

After a full interchange of views the Board unanimously agreed upon said supplemental bill. A copy of said bill will be found in the first quarterly report of the Secretary.

The Secretary, under the direction of the Executive Committee, was requested to see that quarantine was effectually established and enforced, and all precautionary measures thoroughly exercised for the control and suppression of all contagious diseases, and, whenever requested by the Executive Committee, to visit the counties where these epidemics prevailed (especially small-pox), have conference with the health officials, examine the patients when necessary as a medical expert, and receive such compensation for the work as the Executive Committee might allow.

The expenses of the members attending this session of the Board were as follows:

Dr. Welch.....	\$16 74
Dr. Johnson.....	5 32
Dr. Surber.....	3 75

Said bills were all approved by the Auditing Committee.

On motion, the Board adjourned.

J. W. REDDEN, M.D., *Secretary.*

## FIRST QUARTERLY MEETING.

TOPEKA, KAS., March 14, 1889.

The State Board of Health assembled in regular quarterly session, at the office of the Secretary, Thursday, March 14, at 4 P.M. Present: Drs. Johnson, Jones, Welch, Hill, Swallow, and Schenck.

Since our last meeting, the Secretary has received the following official communication from the Governor:

TOPEKA, March 7, 1889.

*Dr. J. W. Redden, Topeka, Kas.*—DEAR SIR: The appointments on State Board of Health, confirmed by the Senate, are as follows:

Dr. D. C. Jones, of Topeka, to succeed himself.

Dr. W. L. Schenck, of Osage City, to succeed himself.

Robert C. Musgrave, of Grenola, Elk county, for the full term commencing March 28, 1889, to succeed H. S. Roberts.

J. W. Jenney, of Salina, Saline county, to succeed himself.

D. H. Hill, of Augusta, Butler county, to succeed Chas. H. Guibor.

Frank Swallow, of Valley Falls, Jefferson county, to succeed D. Surber.

R. A. Williams, of Olathe, for the full term commencing March 28, 1889, to succeed J. F. Lewis.

Very respectfully,

LYMAN U. HUMPHREY, *Governor.*

Drs. Hill and Swallow, having qualified and filed their oath with the Secretary of State, were present, and after being introduced to the other members of the Board, took their seats as members.

On motion, the reading of the minutes of the last meeting was dispensed with.

The Secretary then presented his regular quarterly report. On motion, said report was received, adopted, and ordered engrossed for publication in the next annual report. The report will be found subsequently.

All the members discussed very freely the question of collecting and preparing vital statistics.

On motion, Drs. Jones, Welch and the Secretary were appointed a committee to examine the forms of blanks now in use by the State Board for collecting vital statistics, and see whether or not they could be modified, changed or improved so as to render them more convenient in shape, style and form, and if possible, to secure a more general interest among the physicians in giving prompt attention in preparing and sending promptly said returns to the county health officers. Said committee were instructed to report at the next meeting of the Board.

The Secretary was requested to issue a circular letter and send to every county health officer in the State, and urge upon them the importance and desirability of each one preparing and sending to every practicing physician in their respective counties, urging upon them the necessity of preparing and sending in monthly to the county health officer the returns of all births, deaths and still-births that may come to their knowledge, and thus render the vital statistics of the State more complete, satisfactory and valuable.

The following bills were then referred to the Auditing Committee:

Expenses of members attending this session of the Board:

Dr. Hill.....	\$13 17
Dr. Welch.....	15 85
Dr. Johnson.....	6 32
Dr. Schenck.....	10 00
Dr. Swallow.....	6 55
J. A. McLaughlin, office rent for three months until March 31.....	60 00
G. Anderson, services as janitor for six months.....	30 00
John A. Mileham, P. M., for postage stamps, postals and postal-wrappers for present quarter.....	75 00
J. J. Blower, for one Crown type-writer for State Board of Health.....	20 00
For clerical labor in office of Secretary.....	52 00
To special sanitary service in visiting and examining small-pox patients at Atchison, in conference with the health authorities and enforcing quaran- tine, by order of the Executive Committee of the State Board of Health, the present quarter.....	50 00
To expenses to and from same place.....	9 75
To special sanitary service in visiting and examining the small-pox patients at Reserve, Brown county, in conference with the health authorities and enforcing quarantine, by order of the Executive Committee of the State Board of Health.....	50 00
To expenses to and from same place.....	11 65
To special sanitary service in visiting and examining the small-pox patients at Junction City, in conference with the health authorities and enforcing quarantine, by order of the Executive Committee of the State Board of Health.....	50 00
To expenses to and from same place.....	11 75
To special sanitary service in visiting and examining the small-pox patients in Dickinson county, in conference with the health authorities and en- forcing quarantine, by order of the Executive Committee of the State Board of Health.....	50 00
To expenses to and from same place.....	10 35
To special sanitary services, in visiting and examining small-pox patients at Oberlin, in conference with the health authorities and establishing quar- antine, by order of the State Board of Health, the present quarter.....	50 00
To expenses to and from same place.....	21 15
Wells, Fargo & Co., express charges, present quarter.....	6 75
Pacific Express Co., express charges, present quarter.....	4 30
Western Union Telegraph Co., telegrams, present quarter.....	8 50
Excelsior Gas Co., gas for present quarter.....	2 60

The Board then took a recess until 8 P. M.

At 8 P. M. the Board convened. Members present as in the afternoon.

The Auditing Committee approved and ordered paid all bills referred to them.

On motion, the Secretary was instructed to have printed and bound separately, and in pamphlet form, 1,000 copies of Dr. Johnson's papers on "The Object of the Sanitary Convention" and "Longevity," and 1,000



copies in pamphlet form of Dr. Schenck's paper on "The Disposal of Sewage."

After a few moments of social conversation, the Board adjourned to meet at the regular annual session in June, at such time as the Executive Committee may decide, unless sooner called together in special session.

J. W. REDDEN, M.D., *Secretary*.

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#### SECOND QUARTERLY (FIFTH ANNUAL) MEETING.

TOPEKA, KAS., June 13, 1889.

The State Board of Health convened in regular quarterly session (fifth annual meeting), at the office of the Secretary, on Thursday, June 13, at 4 P. M.

Upon roll-call the following members were present: Drs. Johnson, Jones, Swallow, Hill, Welch, Jenney, and Williams. The latter, having qualified, was introduced to the other members, and took his seat as a member of the Board for the first time.

On motion of Dr. Jones, the reading of the minutes of the last quarterly session was dispensed with.

The Secretary then presented his quarterly report, reviewing the work accomplished and the results therefrom since the last meeting. The report was on motion received, and after it was discussed by several members it was approved, and ordered engrossed for publication in the Fifth Annual Report of the Board.

The special committee on the revision of blanks for vital statistics asked until the September term to complete their report. On motion, said request was granted.

On motion, the election of officers was proceeded with. Dr. Johnson was then placed in nomination for President of the Board for the present year. There being no other member placed in nomination, on motion of Dr. Welch the Secretary was instructed to cast the ballot of all the members present for Dr. Johnson. The Secretary then cast seven votes for Dr. Johnson, and he was unanimously declared President for the ensuing year.

There being no other officer to elect, the Board then proceeded to miscellaneous business.

On motion, Drs. Jones, Swallow and Welch were elected as delegates to attend the next annual meeting of the American Public Health Association, to be held in Brooklyn, N. Y., next November.

On motion, Dr. Redden was elected as delegate to attend the International Congress of Hygiene, to be held in Paris, France, in July and August next, and his expenses to and from New York city ordered to be paid out of the appropriation for the expense of the State Board. He was granted a leave of absence of two months for that purpose.



On motion, Drs. Johnson, Hill and Jenney were appointed delegates to attend the next Annual Conference of State Boards of Health, whenever it is held.

The President then appointed Dr. Hill as a member of the Executive Committee, to fill the vacancy occasioned by Dr. Surber retiring from the Board. The President also appointed Drs. Swallow and Welch on the Auditing Committee, to fill the vacancy occasioned by Drs. Guibor and Surber retiring from the Board.

The following bills were referred to the Auditing Committee:

Expenses of members attending this session of the Board, as follows:

Dr. Hill.....	\$16 00
Dr. Welch.....	17 74
Dr. Johnson.....	10 30
Dr. Swallow.....	8 80
Dr. Jenney.....	14 50
Dr. Williams.....	14 00
J. A. McLaughlin, office rent for three months.....	60 00
To special sanitary service in visiting and examining small-pox patients in Lyon county, in conference with the health authorities and enforcing quarantine, by order of the Executive Committee of the State Board of Health,	50 00
To special sanitary service in visiting and examining small-pox patients in Greenwood county, in conference with the health authorities and enforcing quarantine, by order of the Executive Committee of the State Board of Health.....	50 00
To expenses to and from same places.....	5 35
To special sanitary service in visiting and examining small-pox patients in Linn county, in conference with the health authorities and enforcing quarantine, by order of the Executive Committee of the State Board of Health,	50 00
To expenses to and from same place.....	20 25
Dr. Alexander, for chemical analyses and microscopical examinations of samples of water from Atchison, Concordia, and Salina, and a sample of milk from Atchison, and express charges .....	80 60
Wells, Fargo & Co., express charges on blanks, reports, and periodicals ...	63 98
For clerical labor in office of the Secretary .....	52 00
Pacific Express Co., express charges on blanks, reports, and periodicals....	61 92
J. L. King, P. M., postage stamps and postals for the quarter ending June 30,	120 00

The contract of the Executive Council in leasing the same rooms from J. A. McLaughlin for the use of the State Board of Health from July 1, 1889, at \$20 per month, and service of janitor of same at \$5 per month, was approved by the Board.

On motion, the Board adjourned to meet at the same place at 8 P. M.

At 8 P. M. the Board convened. Members present as in the afternoon.

The Auditing Committee reported all bills referred to them approved, and orders paid. On motion, said report was adopted.

Dr. Williams called attention to the unsanitary and unhygienic surroundings of Olathe.

On motion, Dr. Williams was appointed a special committee of one to investigate the hygienic conditions of Olathe, its drainage, condition of cess-pools, water supply, etc., and make a report to this Board at its next quarterly session.

Dr. Jones, as resident member of the Executive Committee, was requested to give special and prompt attention to any matters that might demand specific and prompt attention, and be reported to him by the clerk of the Secretary of the Board, during his absence.

After a short time spent in social and general conversation in reference to the future outlook and the sanitary condition of the State during the present year, and the duties of local and State Boards of Health in reference thereto, on motion, the Board then adjourned to meet in regular quarterly session the third Thursday in September, at the office of the Secretary.

J. W. REDDEN, M.D., *Secretary.*

### THIRD QUARTERLY MEETING.

TOPEKA, KAS., September 19, 1889.

The State Board of Health met in regular quarterly session, at the office of the Secretary, at 4 P.M.

Upon roll-call, the following members were found present: G. H. T. Johnson, M.D., President, Atchison; D. C. Jones, M.D., Topeka; J. Milton Welch, M.D., Wichita; H. D. Hill, M.D., Augusta; Frank Swallow, M.D., Valley Falls; R. C. Musgrave, M.D., Grenola; R. A. Williams, M.D., Olathe; W. L. Schenck, M.D., Osage City; and the Secretary.

The minutes of the last quarterly session were read, approved, and ordered engrossed.

The Secretary then read his quarterly report, giving a synopsis of the work that had been accomplished by the health officers throughout the State during the past three months. At the present time there are eighty-six county health organizations, doing valuable work for the benefit of the people; and the other twenty counties are doing some work in the line of distributing the literature and pamphlets of this Board, and thus educating the people to appreciate the value of preventive medicine. The reports of the county health officers show an increased interest on the part of the people in general and the physicians in sustaining the health authorities in controlling epidemics, and the prevention of diseases.

On motion, said report was received, approved, and ordered engrossed for publication. Said report will be found on subsequent pages.

Dr. Hill, a member of the Executive Committee, at the request of the Executive Committee visited and had a conference with the County Health Officer, Dr. Kellenberger, of Woodson county, in reference to the cases of small-pox prevailing in Piqua, in said county, in July, and presented a

special and very interesting report of the cases of small-pox that had occurred in said county, the quarantine established, and all precautionary measures taken to stamp out the disease and prevent any further spread of the contagion, with very gratifying results.

On motion, said report was approved and ordered engrossed, and will be found published on future pages of the annual report of this Board.

The Secretary then read a special report on "Small-Pox in El Dorado," during the past summer, and the effectual measures enforced, and successfully executed, as prepared by Dr. McKenzie, the County Health Officer of Butler county.

On motion, said report was received, ordered engrossed, and will be found published on subsequent pages. It is worthy of perusal.

The Secretary then read a special report on small-pox occurring in Topeka the past spring, submitted by Dr. Williamson, County Health Officer of Shawnee county. This report, as well as the two former, shows the value and importance of State and county health boards in establishing quarantines, and enforcing necessary precautionary measures in preventing the spread of this loathsome disease, and thus saving untold suffering and valuable lives.

On motion, this report was also received, approved and ordered engrossed, and will be found printed on subsequent pages.

Dr. Redden, as delegate to the International Congress of Hygiene, held in Paris during the early part of August, presented a report containing a synopsis of the proceedings of said Congress. There were over 600 delegates present, representing the nationalities of the different continents. The proceedings of this Congress were very interesting and instructive, and gave evidence that the people generally appreciate the labors of the sanitarians who labor for the welfare of the people. Great progress is being made by all the leading nations in adopting all sanitary measures that purify the water-courses and prevent contagious and pestilential diseases. One of the most interesting and valuable papers was presented by a lady from Russia, showing the condition of the poor among the laboring classes, and the importance of adopting measures that have for their object the lessening of the hours of labor and their elevation to a higher plane of usefulness. The Congress was in session a week, holding two sessions daily, and dividing their labors into eight sections. It adjourned to meet in London in the summer of 1891.

This special report was on motion received, approved, and ordered published in the Fifth Annual Report.

The following bills were read, and referred to the Auditing Committee:

J. A. McLaughlin, for three months office rent—June, July, and August....	\$60 00
Dr. Reid Alexander, for making chemical analysis and microscopical examination of a sample of water from Montgomery county.....	15 00

## Expenses of members attending sessions of the Board:

Dr. Johnson .....	\$9 32
Dr. Hill .....	16 00
Dr. Williams .....	12 40
Dr. Schenck .....	10 00
Dr. Swallow .....	8 80
Dr. Musgrave .....	18 80
Dr. Welch .....	18 84
Dr. Hill, for special sanitary service in visiting small-pox cases in Woodson county, and assisting the County Health Officer to enforce quarantine and preventive measures .....	50 00
Expenses to and from same place .....	15 00

On motion, the Board took a recess until 7 P. M.

At 7 P. M. the Board reconvened; same members present as at the afternoon session.

The President appointed the following standing committees for the year:

## STANDING COMMITTEES.

- Legislation, Revision of Rules and Regulations, and Library—H. D. Hill, M. D.
- Hygiene of Occupations, and Railway Sanitation—W. L. Schenck, M. D.
- Epidemic and Endemic Diseases, and Quarantine—R. A. Williams, M. D.
- Topography, Meteorology, and Hygiene of Public Institutions—D. C. Jones, M. D.
- Water Sources, Sewerage, Drainage, and Disposal of Substances Injurious to Health—J. Milton Welch, M. D.
- Especial Sources of Danger to Life and Health—Frank Swallow, M. D.
- Adulteration of Food, Drinks and Drugs—R. C. Musgrave, M. D.
- Heating, Ventilation, Lighting and Hygiene of Schools—J. W. Jenney, M. D.
- Vital Statistics, Registration, Meteorological Service, and Nomenclature—J. W. Redden, M. D.

The following members agreed to prepare a paper upon the following topics, and present them at the Fourth Annual State Sanitary Convention, to be held in Lawrence on the first Wednesday in December, the 4th:

- Public Health *versus* Public Wealth—R. A. Williams, M. D.
- Our Homes; the Choice of a Site with reference to Sanitary Conditions—R. C. Musgrave, M. D.
- Utility of Boards of Health—J. Milton Welch, M. D.
- The Sanitary Conditions and Necessities of School Life—Frank Swallow, M. D.
- Duties of the Citizen to the State in maintaining Public Health—D. C. Jones, M. D.
- Endemic, Epidemic and Contagious Diseases, and their Prevention—H. D. Hill, M. D.
- The Water Supply of Kansas, or Water as a Factor in Health and Disease—J. W. Jenney, M. D.
- Sanitary Instruction in our Schools and Colleges—W. L. Schenck, M. D.

Drs. Johnson and Redden will select their own subjects, to be printed on the programs.

On motion, Dr. Williams was granted until the December meeting to

present his special report upon the "Hygienic Conditions of Olathe—Its Drainage, Condition of Cess-pools, Water Supply, etc."

The Auditing Committee made a favorable report upon all bills referred to them. On motion, said report was received, approved, and the bills ordered paid.

The following were appointed as a committee on the part of the Board to act in conjunction with the local committee appointed by the citizens of Lawrence to make all necessary arrangements for the meeting of the Fourth Annual State Sanitary Convention, as follows: Drs. Jones, Swallow, Williams, and Redden.

On motion, the Board adjourned to meet in regular quarterly session in Lawrence on the first Thursday in December (5th).

J. W. REDDEN, M. D., *Secretary.*

#### FOURTH QUARTERLY MEETING.

LAWRENCE, KAS., December 4, 1889.

The State Board of Health convened in regular session at 4 o'clock P. M., in the parlors of the Eldridge House, Lawrence, Kansas.

Dr. Johnson, the President, being absent, on motion Dr. Welch of Wichita was elected President *pro tem*.

Present: Drs. Jones, Welch, Swallow, Schenck, and Williams.

The minutes of the last quarterly session were read and approved.

The Secretary then presented his quarterly report, giving a synopsis of the work of the State Board of Health, the labors of the county health officers, the distribution and demand for pamphlets on contagious diseases, their restriction and prevention.

On motion, the report was received and ordered engrossed for publication in the next annual report, and will be found published in same.

The Executive Committee had no report to present.

The delegates, Drs. Jones and Swallow, from the State Board of Health to the seventeenth annual meeting of the American Public Health Association, held in Brooklyn, New York, October 22-25, presented a very instructive and entertaining report, which was received and ordered engrossed for publication in the fifth annual report, and will be found on subsequent pages.

A special report on "Small-Pox in Montgomery County," by J. T. Davis, M. D., County Health Officer of said county, was presented, received, and ordered engrossed for publication, and will be found in the fifth annual report under the head of "Special Reports on Contagious and Pestilential Diseases."



The following bills were referred to the Auditing Committee:

Postage account for six months, for supplies and pamphlets sent out by the State Board of Health.....	\$85 00
Wells, Fargo & Co., express charges for supplies the present quarter.....	6 82
Pacific Express Co., express charges for supplies the present quarter.....	3 34
Gas Co., for gas for office for six months.....	3 00
Telegraph Co., for telegrams.....	1 00
Expenses of Dr. Jones as delegate to the American Public Health Association, at Brooklyn, N. Y., in October.....	100 00
Expenses of Dr. Swallow as delegate to the American Public Health Association, at Brooklyn, N. Y., in October.....	109 00
Dr. Reid Alexander, for chemical and microscopical examination of a sample of water from Saline county.....	15 00
J. A. McLaughlin, for three months' office rent to December 31.....	60 00
F. H. Hulander, services as janitor, six months.....	30 00
Expenses of members and the Secretary attending the quarterly session of the State Board of Health, at Lawrence, as follows:	
Dr. Welch.....	19 30
Dr. Jones.....	3 01
Dr. Swallow.....	11 00
Dr. Williams.....	10 45
Dr. Schenck.....	7 60
Dr. Redden.....	14 35

The Secretary presented letters from President Fairchild of the State Agricultural College and Dr. Roberts of Manhattan, inviting the State Sanitary Convention to hold their next annual convention in that city next December. On motion, said letters were referred to the Sanitary Convention for consideration and action.

The papers of the members of the Board were postponed, to be read at the fourth annual State Sanitary Convention; the proceedings of which will be published as a supplement to the Fifth Annual Report.

The Auditing Committee made a favorable report on all bills submitted to them. On motion said report was approved, and the bills ordered paid.

On motion, the Board adjourned to meet in regular quarterly session in Topeka on the second Thursday in March, 1890, unless otherwise ordered by the Executive Committee, at the office of the Secretary.

J. W. REDDEN, M. D., *Secretary.*

## ABSTRACTS OF QUARTERLY REPORTS

PRESENTED BY THE SECRETARY AT REGULAR MEETINGS OF THE STATE BOARD OF HEALTH.

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## FIRST QUARTERLY REPORT.

MR. PRESIDENT, AND GENTLEMEN: Since the quarterly meeting in December last the regular biennial session of the Kansas Legislature has convened, transacted its business, and adjourned. Several members of the State Senate left their homes and came to the State capital pledged, through prejudice and local enmities between resident physicians, to if possible abolish the State Board of Health, and worked strenuously to accomplish that object; and finally, by a bare majority, passed a repealing act. But the members of the House through circular letters containing facts and figures of the labors and benefits accomplished through the State and local health boards, refused to concur in the action of the Senate.

The resident member of the State Board of Health, Dr. Jones, together with the Secretary of the Board and a few personal friends, succeeded in the last hour in securing an appropriation by the Legislature for the Board for the next two fiscal years. So that now the Board is on the same footing as it was before the convening of the Legislature, and is in better condition to accomplish more labor and secure better results in the line of sanitation and preventive medicine throughout the State, from the fact that the Board has been more generally and better advertised, and the people know more of its aims and benefits, and should be ready and willing to appreciate its importance and aid in the enforcement of its rules and instructions.

Very early during the session of the Legislature, Dr. Jones and the Secretary, as requested by the Board at its special meeting in January, prepared a supplemental act, being a special law in reference to conferring full power and authority upon the State and county health boards in controlling, regulating and suppressing all contagious, infectious or pestilential diseases, with power to call in aid when necessary, and enforce all the provisions of said act under penalty; and also authority and power to supervise and regulate sewers and the deposit of offal, dead animals or poisonous materials, and the supervision of running streams and the purity of the water supplies. Said supplemental act was very full and complete, and contained twenty-five sections. A copy of said act is herewith submitted and made a part of this report:

AN ACT supplemental to an act entitled "An act to create a State and local boards of health, and to regulate the practice of medicine in the State of Kansas," approved March 7, 1885.

*Be it enacted by the Legislature of the State of Kansas:*

SECTION 1. The State and local boards of health shall have power and it shall be their duty to guard against the introduction of yellow fever, cholera, small-pox,



scarlet fever, diphtheria, or any other contagious, infectious and pestilential diseases, by the exercise of proper and vigilant medical inspection and control of all persons and things coming within the limits of their jurisdiction from infected places, or which for any cause are liable to communicate contagion; to give public notice of infected places by displaying red flags or by posting placards on the entrances of the premises; to require the isolation of all persons and things that are infected with or have been exposed to contagious, infectious or pestilential diseases, and when deemed necessary, to order and enforce rigid quarantine, and to provide suitable places for the reception of the same; and to furnish medical treatment and care for persons sick with such diseases who cannot otherwise be provided for; to prohibit and prevent all intercourse and communication with, or use of, infected premises, places, and things, and to require, and if necessary to provide the means for, the thorough cleansing and disinfection of the same before general intercourse therewith or use thereof shall be allowed. And it shall be their duty to report to the State Board of Health promptly facts which relate to contagious, infectious and pestilential diseases, and every case of yellow fever, cholera, small-pox, scarlet fever and diphtheria occurring within the limits of their jurisdiction.

SEC. 2. Whenever any householder knows or has reason to believe that any person within his family or household has small-pox, diphtheria, scarlet fever, cholera, typhus or typhoid fever, he shall within twenty-four hours give notice thereof to the health officer of the county in which he resides, and such notice shall be given either at the office of the health officer or by a communication addressed to him and duly mailed within the time above specified.

SEC. 3. No householder in whose dwelling there occur any of the above-mentioned diseases shall permit any person suffering from any such disease, or any clothing or property, to be removed from his house, without the consent of the health officer, or attending physician; and the said health officer or attending physician shall prescribe the conditions of removal.

SEC. 4. No parent, guardian, or other person, shall carelessly carry about children or others affected with infectious diseases, or knowingly or willfully introduce infectious persons into other persons' houses, or permit such children under his care to attend any school, theater, church, or any public place.

SEC. 5. Whenever any physician knows or has reason to believe that any person whom he has called upon to visit is infected with small-pox, scarlet fever, diphtheria, typhus or typhoid fever, or cholera, such physician shall within twenty-four hours give notice thereof to the secretary of the local board of health of the county in which such person lives.

SEC. 6. No person affected with small-pox, scarlet fever, diphtheria or cholera, and no person having access to any person affected with any of the said diseases, shall mingle with the general public until such sanitary precautions as may be prescribed by the local board or attending physician shall have been complied with.

SEC. 7. Persons recovering from small-pox, scarlet fever, diphtheria, or cholera, and nurses who have been in attendance on any person suffering from any such disease, shall not leave the premises till they have received from the attending physician, board of health, or the health officer, a certificate that they have taken such precautions, as to their persons, clothing, and all other things which they propose bringing from the premises, as are necessary to insure the immunity from infection of other persons with whom they may come in contact; and no such person shall expose himself in any public place, shop, street, inn or public conveyance without having first adopted such precautions.

SEC. 8. Nurses and other attendants upon persons sick with small-pox, scarlet fever, diphtheria, or cholera, shall adopt for the disinfection and disposal of excreta,

and for the disinfection of utensils, bedding, clothing and other things which have been exposed to infection, such measures as may be ordered in writing by the local board of health.

SEC. 9. No person shall give, lend, transmit, sell or expose any bedding, clothing or other article likely to convey any of the above diseases, without having first taken such precautions as the local board of health may direct as necessary for removing all danger of communicating any such disease to others.

SEC. 10. Any local board of health may direct the destruction of any bedding, clothing, or other articles which have been exposed to infection.

SEC. 11. Whenever small-pox, diphtheria, scarlet fever or other contagious disease shall appear in a town or school district, it shall be the duty of the local board of health immediately to notify the teachers of the public schools in the neighborhood, of the fact; and it shall be the duty of all teachers and school officers, when thus notified, or when otherwise they shall know or have good reason to believe that any such disease exists in any house in the neighborhood, to exclude from the school-house all children and other persons living in such infected houses, or who have called or visited at such houses, until such time as the local board of health or attending physician shall certify that such children or other persons may safely be readmitted.

SEC. 12. When persons from houses or places which are infected with any of the diseases specified in section 11 have entered any school-room, or when from any other cause the school-room has probably been infected, it shall be the teacher's duty to dismiss the school, and notify the school officers and local board of health, and no school shall again be held in such school-room until the room has been disinfected to the satisfaction of the local board of health; and it shall be the duty of the school officers and board of health to have the room disinfected as soon as possible.

SEC. 13. The board, when satisfied upon due examination that a cellar, room, tenement or building in its county, occupied as a dwelling-place, has become, by reason of want of cleanliness or other cause, unfit for such purpose, and a cause of sickness to the occupants or the public, may issue a notice in writing to such occupants, or the owner or his agent, or any of them, requiring the premises to be put into a proper condition as to cleanliness, or, if they see fit, requiring the occupants to quit the premises within such time as the board may deem reasonable. If the persons so notified, or any of them, neglect or refuse to comply with the terms of the notice, the board may cause the premises to be properly cleansed at the expense of the owner, or may close up the premises, and the same shall not again be occupied as a dwelling-place until put in a proper sanitary condition. If the owner thereafter occupies or knowingly permits the same to be occupied without putting the same in a proper sanitary condition, he shall forfeit not less than ten nor more than fifty dollars.

SEC. 14. No person having small-pox, diphtheria, scarlet fever, cholera, or other disease dangerous to public health, shall enter, nor shall any person allow anyone under his charge who has any such disease to enter, any conveyance without having previously notified the owner or person in charge of such conveyance of the fact of his having such disease.

SEC. 15. The owner or person in charge of any such conveyance shall not, after the entry of any person so infected into his conveyance, allow any other person to enter it without having sufficiently disinfected it under the direction of the local board of health or the supervision of the health officer.

SEC. 16. No person shall let or hire any house or room in a house in which small-pox, diphtheria, scarlet fever, cholera or typhoid fever has existed, without having

caused the house and the premises used in connection therewith to be disinfected to the satisfaction of the local board of health.

SEC. 17. Where the State or any local board of health is of the opinion that the cleansing and disinfecting of any house, building, car, vessel, or vehicle, or any part thereof, and of any article therein likely to contain infection, would tend to prevent or check infectious disease, it shall be the duty of such local board of health to give notice in writing to the owner, agent or occupier of such house, building, car, vessel or vehicle, or part thereof, requiring him to cleanse and disinfect to the satisfaction of the health officer, or board of health, such house, building, car, vessel, or vehicle, and said articles, within a time specified in such notice.

SEC. 18. If the person to whom notice is given fails to comply therewith, he shall be liable to a penalty of not less than five dollars and not exceeding ten dollars for every day during which he continues to make default; and the local board of health shall cause such house, building, car, vessel, or vehicle, or any part thereof, and articles, to be cleansed and disinfected at the expense of the county; and the county may recover the expenses so incurred from the owner, agent or occupier in default, by act of special assumpsit.

SEC. 19. The State and local boards of health shall have power and it shall be their duty to receive and examine into the nature of complaints made by any of the inhabitants concerning nuisances dangerous to life and health within the limits of their jurisdiction; to enter upon or within any place or premises where nuisances or conditions dangerous to life and health are known or believed to exist, and personally, or by appointed agents, to inspect and examine the same; and all owners, agents and occupants shall permit such sanitary examinations; and every such board of health shall have power, and it shall be its duty, to order the suppression and removal of nuisances and conditions detrimental to life and health found to exist within the limits of its jurisdiction.

SEC. 20. The State and local boards of health shall have supervision of the running streams, and shall have the power and authority to have thorough examination of the waters of said streams made, and whenever the sewage deposit, factory offal, or dead animals, or poisonous materials, are deposited or conveyed into said streams and contaminate said water, then they shall proceed to have such sources or material removed, see that the sources thereof are abated, removed or abandoned, for the purity of the water supplies and the benefit of the public health.

SEC. 21. The State Board of Health shall annually inspect the sanitary condition and surroundings of all State and public buildings, make such suggestions to the boards of trustees of said institutions, and to the Governor, as they may deem necessary to preserve the health of the inmates, and adopt such measures for the prevention, control or suppression of any or all contagious, epidemic or pestilential diseases that may threaten or attack the inmates of any such institution, as in their judgment are necessary for the health and comfort of the inmates.

SEC. 22. Any member of the State Board of Health, local board of health, or any health officer, or any person employed by the State or local board of health, may, when obstructed in the performance of his duty, call to his assistance any constable or other person he thinks fit, and it shall be the duty of every such constable or person so called upon to render such assistance.

SEC. 23. Any person who shall willfully violate any of the provisions of this act or of said regulations, and any person who shall willfully interfere with any person or thing to prevent the execution of the provisions of this act or of said regulations, shall be guilty of a misdemeanor, and upon conviction thereof shall be subject to a fine of not less than ten nor more than one hundred dollars. Justices of the peace

and district judges shall have jurisdiction thereof; and the county attorney shall prosecute all parties violating the provisions of this act.

SEC. 24. It shall be the duty of the county commissioners of the several counties of this State to organize local boards of health for their respective counties, as provided in section 7 of chapter 129, Laws 1885, on or before July 1st, 1889; and for failure to comply with this section shall each be fined in any sum not less than twenty nor more than one hundred dollars, and may also be prosecuted for malfeasance in office; and any and all of such prosecutions shall be made by the county attorneys of the respective counties in the district court, at any regular term in said counties.

SEC. 25. This act shall take effect from and after its publication in the official State paper.

Said act in the Senate was referred to the Health Committee early in the session, but was never reported back to the Senate for action. It was also introduced later into the House by Representative Walrond, of Osborne county, was read a second time, referred to the committee of the whole, but failed to be reached. Therefore the State Board failed to secure this much-needed supplemental act.

The following communication was prepared by the Secretary, by the direction of the Executive Committee of the State Board, and in compliance with former official actions of the State Board, and sent to the Governor, who referred it to the Health Committee of the Senate, and they prepared a bill in accordance with the provisions contained in said communication, and had it introduced at the same time in the Senate and the House. Finding it very doubtful whether the bill could be reached in time for passage before the close of the session, an amendment was made to another bill, giving cities power and authority to regulate the purity of running streams and water supplies, and preventing the emptying of sewers into running streams within two miles above any water-supply company. This bill, being further advanced, was passed, and the same object accomplished as was provided in the bill referred to previously. A copy of the communication to the Governor is herewith submitted:

STATE BOARD OF HEALTH, OFFICE OF SECRETARY, }  
TOPEKA. KANSAS, January 31, 1889. }

*Hon. L. U. Humphrey, Governor*—DEAR SIR: Section 4 of the act creating the State Board of Health (chapter 129, Laws 1885) provides among other duties that it shall supervise the health interests of the State, and to this end shall advise officers of government in regard to location, drainage, water supply, disposal of excreta, heating and ventilation of public buildings.

Accordingly, under the terms of this provision, we have the honor to submit for your information and action the inclosed petition of the City Board of Health of Topeka upon a subject of vital importance to the citizens of that city. We have also been waited upon by a committee of the Kansas State Medical Society in this same interest.

As to the subject-matter of the petition, we may say in general, that the pollution of our running streams by sewage and other organic refuse, merits and should receive the early and earnest attention of our State authorities. The harmfulness



of the practice is unquestioned. Sewage-polluted water is undoubtedly the pathological and potential cause of most of the preventable diseases. In the older States this view has been affirmed by an enlightened public opinion and given the force of the law. In the State of Massachusetts it has long been prohibited by statute under heavy penalties to foul any running stream within twenty miles above any town taking therefrom its water supply. In our own State, for obvious reasons, we have thus far permitted these evils to exist without a serious effort to prevent them; but their danger is being comprehended, and, as population becomes more dense upon our streams, their suppression must inevitably receive the consideration of the law-making power. For, in general, it may be said, that our Kansas streams have not sufficient volume to render innocuous any considerable output of sewage. The efforts that have been made from time to time to quiet the public mind by demonstrating the destruction of sewage and the self-purification of the water which contained it, are for the most part founded upon selfish interests, and may practically be disregarded.

But fortunately (using the language of the closing paragraph of the petition, which we desire to emphasize), there exist other ways—simple, economical, and completely effectual methods—of disposing of sewage besides emptying it into the running streams. As to the particular case upon which the petition rests, we have to advise your Excellency that in our judgment the situation is fraught with danger to the water supply of Topeka, and we would therefore earnestly urge the propriety of referring this petition to the State Board of Charities with instructions to report without delay as to the feasibility of putting in operation some other plan of sewage disposal for the Asylum. The configuration and topography of the Asylum grounds would appear to be favorable for sewage irrigation, but the particular method of disposal being largely a question of expediency, we refrain at this time from expressing an opinion thereon.

The public health being among the most cherished interests of the State, it seems impolitic and unwise, as it is illogical and indefensible, that the State should maintain a nuisance which directly assails that interest.

Very respectfully,

J. W. REDDEN, M. D., *Secretary.*

D. C. JONES, M. D.,

*Member Executive Committee.*

A medical-practice act, being a supplemental act, was carefully prepared by a conference committee, representing the three State medical societies and a committee from the State Board of Health, and unanimously approved by said committee in conference. It was carefully and thoroughly examined, modified and approved by the Attorney General of the State, so that there could be no question as to the constitutionality of this act, should it be passed upon by judicial tribunals. This act was introduced into the House early in the session, and after being amended in several important particulars, especially one creating a new examining board instead of putting it under the control and management of the State Board of Health, was passed by the House; but the Senate defeated it in a committee of the whole, as many of the members of said body were determined to prevent the establishment of any new board of any character, and if possible to repeal the acts creating some of the State boards then existing. A copy of said act is herewith submitted:

AN ACT supplemental to an act entitled "An act to create a State and local boards of health, and to regulate the practice of medicine in the State of Kansas," approved March 7, 1885.

*Be it enacted by the Legislature of the State of Kansas:*

SECTION 1. That no person shall practice medicine, surgery or obstetrics in this State, unless such person shall possess the qualifications required by this act, and shall have a certificate issued by the Kansas State Board of Health, authorizing him or her to so practice, as herein provided.

SEC. 2. In order to obtain such certificate, he or she may, if a graduate in medicine, surgery, or obstetrics, present his or her diploma to the Kansas State Board of Health. If the diploma is found genuine and from a legally-chartered medical institution in good standing, and if the person named therein be the person claiming and presenting the same, and shall satisfy the said Board that he or she is a person of good moral and professional character, the said State Board of Health shall issue its certificate to that effect, and authorizing said person to practice medicine, surgery, or obstetrics, as the case may be, signed by a majority of the members thereof; and such certificate shall be conclusive as to the right of the lawful holder of the same to practice medicine in this State.

SEC. 3. Any graduate in medicine, surgery or obstetrics may present to the health officer of the local board of health of the county in which he or she resides, his or her diploma accompanied by his or her affidavit made before anyone authorized by the State of Kansas to administer oaths, setting forth that he or she is the person named in the diploma and that it was received by him or her after attending the course of instruction and passing the examination as provided for in the act organizing the college from which it emanated or as published in its announcements or curriculum. which diploma and affidavit shall be certified to by said health officer and forwarded by him to the Secretary of said State Board of Health. The State Board of Health shall, at its first regular meeting after the receipt of such diploma and affidavit, verify the same; and if satisfied they are correct, and the school granting the diploma was legally organized and of good repute, it shall issue its certificate, signed as provided in section two of this act, setting forth the facts as to graduation, and the name of the county in which the applicant is located, and authorizing him or her to practice medicine, surgery, or obstetrics, as the case may be, which certificate shall be recorded by the clerk of said county in a book provided by the State Board of Health for that purpose, and kept in the office of the county clerk; and such certificate shall be conclusive evidence of the right of the lawful owner of the same to practice in the county where it shall be so recorded.

SEC. 4. Every person desiring to practice medicine, surgery or obstetrics in the State of Kansas, who is not a graduate of a reputable and legally-organized medical college, or who has not been continuously engaged in the practice of medicine in some one county in the State for five years preceding the passage of this act, shall present himself or herself before the State Board of Health at a regular or called meeting of the Board, and submit to such elementary and practical examination by said State Board of Health as shall test his or her qualifications as a practitioner of medicine, surgery, or obstetrics; and said State Board of Health is hereby created a board of examiners for such purpose. Such examinations shall, whenever practicable, be so arranged that the Board may not know at the time upon whose examination they are passing. Such examinations shall be in writing; and all questions and answers shall be filed in the office of the Secretary of the State Board of Health, and kept open for inspection for one year.

SEC. 5. After the expiration of one year from the time this act goes into effect, any person desiring to practice medicine, surgery or obstetrics in the State of Kansas, and not in possession of a certificate therefor, shall receive it only after passing a

satisfactory examination as provided in section four of this act, at a regular meeting of the State Board of Health, and paying therefor to said Board a fee of five dollars.

SEC. 6. Any person of good moral and professional character who has been continuously engaged in the practice of medicine, surgery or obstetrics in any one county in the State of Kansas for five years or more preceding the taking effect of this act, and who shall present satisfactory evidence to the State Board of Health of such facts by the affidavits of himself or herself and also of two other credible witnesses, may receive a certificate from the State Board of Health in accordance with the facts, upon the payment of the sum of five dollars to the Board. But in all cases coming under this section, the State Board of Health may require, in its discretion, other and further evidence than the affidavits herein mentioned, before issuing a certificate to the applicant. The lawful holder of a certificate issued under the provisions of this section shall be entitled to practice medicine, surgery and obstetrics in the State of Kansas.

SEC. 7. The State Board of Health shall convene within three months after the passage of this act, for the purposes herein provided, and shall meet from time to time thereafter as may be necessary for such purposes. It shall prepare three forms of certificates, one for persons in possession of diplomas, the second for candidates examined and favorably passed on by the Board, and the third for persons who have been continuously engaged in the practice of medicine for five years or more. All certificates issued by the State Board of Health under the provisions of this act shall be attested by the Secretary of the Board and issued under its seal, and signed by a majority of its members. Due notice shall be published of all its meetings for examinations. The State Board of Health shall furnish to the county clerks of the several counties a list of all persons receiving certificates, to be recorded in books furnished them for that purpose. The Secretary or any member of the Board shall have authority to administer oaths and take testimony in all matters relating to their duties as examiners.

SEC. 8. Every graduate of a medical college applying to the State Board of Health for a certificate, under the provisions of this act, shall pay to the Secretary of the Board a fee of two dollars; those who have practiced without graduation for five years or more shall pay a fee of five dollars; and those applying for examination shall also pay a fee of five dollars each. All fees to be paid at the time of making the application.

SEC. 9. All moneys received by the Secretary of the State Board of Health, or by any member thereof, for certificates or licenses, as provided in this act, shall be paid into the treasury of the State of Kansas.

SEC. 10. The State Board of Health may refuse to grant a certificate to any person who has been convicted of a crime committed in the practice of his or her profession or in connection therewith, and may revoke certificates for like cause, or for satisfactory evidence of incompetency or gross immorality; and such refusal or revocation shall prohibit such person from practicing medicine, surgery, or obstetrics: *Provided*, Such refusal or revocation of a certificate can only be made by the affirmative vote of a majority of the members of the State Board of Health: *And provided further*, That the diploma of a legally-chartered medical college, which may be presented, shall not be rejected except by a like vote.

SEC. 11. Any person shall be regarded as practicing medicine within the meaning of this act who shall treat, operate on, or prescribe for any physical ailment of another; but nothing in this act shall be construed to prohibit serving in cases of emergency, or the domestic administration of family remedies. And this act shall not apply to commissioned surgeons of the United States Army, Navy or Marine Hos-



pital Service in the discharge of their official duties, nor shall it apply to a physician called from another State as counsel.

SEC. 12. Any local or itinerant vendor of any drug, nostrum, ointment, or appliances of any kind, intended for the treatment of disease, deformity, or injury, or any person who shall by writing or printing or any other method profess to cure or treat disease, deformity, or injury by any drug, nostrum, manipulation, or other expedient, shall pay a license of one hundred dollars (\$100) per month, payable in advance, to be collected by the State Board of Health in the name of the State of Kansas. And it shall be lawful for the State Board of Health to issue such license, the same to be signed by the President of the Board, and attested by the Secretary of the Board, with the seal of the Board. Any such itinerant vendor who shall vend or sell any such drug, ointment, appliance, or application, without having a license so to do, shall, if found guilty, be fined in any sum not less than one hundred dollars (\$100) nor more than three hundred dollars (\$300) for such offense. But such Board may for sufficient cause refuse any such license.

SEC. 13. Any person practicing medicine, surgery or obstetrics in the State without the certificate issued by this Board in compliance with the provisions of this act shall, for each and every instance of such practice, forfeit and pay to the State of Kansas a fine in the sum of one hundred dollars (\$100) for the first offense, and two hundred dollars (\$200) for each subsequent offense; and any person filing or attempting to file as his or her own the diploma or certificate of another, or a false or forged affidavit of identification, shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than one hundred dollars (\$100) nor more than three hundred dollars (\$300), or by imprisonment in the county jail not more than one year, or by both such fine and imprisonment.

SEC. 14. Any person residing outside of the State of Kansas, and wishing to practice medicine, surgery or obstetrics in this State, must comply with the provisions of this act, and obtain from the State Board of Health a certificate as herein provided, and must have his certificate of diploma or examination recorded in the office of the clerk of the county in which he or she wishes to practice.

SEC. 15. The penalties provided in this act for violation of any of the provisions thereof shall not be enforced prior to the first day of July, 1889.

SEC. 16. Each member of the State Board of Health shall receive five dollars and necessary expenses for each day he is actually and necessarily engaged in the examination of persons seeking to practice medicine in the State of Kansas, the same to be paid on sworn statements, to be audited by the Auditor of State and paid by the State Treasurer: *Provided*, That the examinations held by the State Board of Health under this act shall be only at their regular quarterly meetings.

SEC. 17. All acts and parts of acts in conflict therewith are hereby repealed.

SEC. 18. This act shall take effect and be in force from and after its publication in the official State paper.

Since the last meeting of the Board, the following changes have been made in the members of this Board:

Dr. D. H. Hill, of Augusta, to succeed Dr. C. H. Guibor, of Beloit; Dr. Frank Swallow, of Valley Falls, to succeed Dr. D. Surber, of Perry. These two new members are entitled to be with us and take part in the proceedings of this meeting. Dr. R. C. Musgrave, of Grenola, was appointed to succeed Dr. H. S. Roberts, of Manhattan, and Dr. R. A. Williams, of Olathe, to succeed Dr. J. F. Lewis, of Howard. These two persons are commissioned to become members from and after March 28, 1889.

The following changes have taken place since the last meeting of the Board, among the county health officers:

C. C. Lovin, M.D., of Lakin, was appointed County Health Officer of Kearny county; John A. Henning, M.D., County Health Officer of Anderson county, in place of D. C. Van Stavern, M.D.; F. Dulin, M.D., of Finney county, in place of H. D. Niles, M.D.; B. P. Williamson, M.D., of Graham county, in place of E. C. Loomis, M.D.; R. C. Dryden, M.D., of Hamilton county, in place of L. S. Downs, M.D.; T. M. Coleman, M.D., of Harvey county, in place of Max Miller, M.D.; and L. B. Powell, M.D., of Rooks county, in place of E. J. Donnell, M.D.

The following death certificate is well worthy of special mention: Lydia Hitchcock (white), died at Mount Ida, Anderson county, August 26, 1888, aged 91 years, 10 months and 20 days. She was born in Waterloo, N. Y.; had lived in Kansas 23 years; was sick six days, and died from old age.

The reports of the State Board of Health are becoming more interesting and appreciated for their intrinsic value, not only in this State, but by sanitarians in many other States. The following letter, just received from Plainfield, N. J., is one of many such frequently received at this office, and reads as follows:

PLAINFIELD, N. J., March 11, 1889.

*J. W. Redden, M.D., Topeka, Kansas*—DEAR DOCTOR: Some time ago, as I was coming east, I met a man who allowed me to look over the last report of the Kansas State Board of Health. I was quite impressed with the efficiency of the work. I was particularly impressed by the section devoted to education. I desire to have a copy sent to the Rev. W. C. Porter, D.D., Fort Scott, Kansas, and would greatly enjoy being the possessor of one myself. If you will kindly see that one be sent to Dr. Porter I will consider it a personal favor. If the books are sold, or any expense attending the mailing of it to him, I will gladly pay if you will send me the amount. Being until recently a physician of Fort Scott, I still possess an interest in the welfare of the State.

Hoping you can comply with my request, I am, fraternally yours,

W. F. GASTION, M.D.

The following official information, under the interstate notification, has been received from the secretaries of State boards of health in reference to small-pox:

AUGUSTA, MAINE, March 4, 1889.—One case of varioloid, in the county of Kennebec. The origin of the disease is supposed to have been from the cars while traveling. The usual precautions are taken.

PHILADELPHIA, January 10, 1889.—Two cases of small-pox have occurred at Nanticoke, in the county of Luzerne, in the person of children, one of whom has died. The origin of the disease is probably Polish emigrants. Strict isolation and disinfection have been taken.

PHILADELPHIA, January 18, 1889.—Eight cases of small-pox exist at Nanticoke, in the county of Luzerne. The following precautions have been taken: Isolation, vaccination, and closing of public schools.

RED WING, MINNESOTA, January 21, 1889.—A case of varioloid at Minneapolis, Hennepin county; a married woman, aged 28 years; origin unknown. Immediately removed to quarantine hospital, with husband and child, and isolated.

LANSING, MICHIGAN, December 24, 1888.—One case of small-pox at Cheboygan, county of Cheboygan; name, John Scott, 35 years old; from Seattle, Washington Territory. The patient died. The health officer writes: "He was sick with the disease all his way along. His friends were admitted to his room until yesterday morning, when small-pox was recognized by his physician; those exposed previously have been isolated. Four cases of small-pox now in Lansing, and seven cases in Howell."

DES MOINES, IOWA, December 31, 1888.—Small-pox at Monticello and Council Bluffs; origin not well known. Rigid preventive measures have been instituted.

COLUMBUS, OHIO, December 27, 1888.—One case of small-pox at New Washington, Crawford county. Vaccination and isolation of all exposed persons, and quarantine has been enforced. January 14, 1889.—One case of small-pox at Ashtabula, and one at Oberlin. At New Washington there have been seven cases, with two deaths. Isolation and vaccination have been enforced. January 24.—Since last report cases of small-pox have developed in the following places: Two near New Washington, origin from former cases there; two in Cleveland, probable origin from cases contracting the disease near Toronto, Ontario; one case in Twinsburg, Summit county.

On the last day of February the County Health Officer of Anderson county reported that it was thought they had a case of small-pox in Garnett, and he ordered the usual precautionary measures. The citizens were much alarmed, as small-pox was prevailing in the western part of Linn county adjoining Anderson county; but a few days ago he reported that the supposed case of small-pox at Garnett proved to be measles.

On January 4th, Dr. H. S. Roberts, of Manhattan, wrote as follows:

"There are altogether five cases of small-pox and varioloid in Manhattan; not one typical. All removed to pest-house one mile outside of city limits, and quarantined. It is not spreading. Our board of education requires certificates of vaccination of all children who shall enter the schools. We have a full supply of vaccination blanks."

The following communication was received:

WALLACE, KANSAS, December 30, 1888.

*J. W. Redden, M. D., Secretary State Board of Health, Topeka*—DEAR DOCTOR: I hereby notify you that the small-pox has broken out in an epidemic form at Hugo, Colorado; and inasmuch as many of the railroad men are running into Wallace who have been exposed, we are liable to have the contagion spread in our city, and along the road to other places. The officials of the State have taken away all the legal rights we had, and left us at the mercy of the hands of bad men, and unprotected in all sanitary matters. We thus call upon you for protection from the invasion of this dreadful disease. Let me hear from you by return mail.

Yours very truly,

MANY CITIZENS.  
(By J. N. Page.)

Below is the answer:

TOPEKA, KANSAS, December 31, 1888.

*J. M. Page, M. D., Wallace*—DEAR DOCTOR: Your letter of the 30th just received. Regret to learn that you are threatened with the introduction of small-pox from Hugo, Colorado. Will not be surprised, however, to learn of this disease appearing in different parts of the State, unless the city and county health authorities enforce strict sanitary and precautionary measures to regulate and suppress this disease. I hope the County Commissioners will give you full authority and power, and render you all possible aid in preventing the introduction of small-pox into your county. I send you by mail to-day twelve copies of the pamphlet on "Small-Pox; its Restriction

tion and Prevention." Try and get all your county papers to publish this pamphlet in full, for the benefit of the people of your county, as a matter of necessary public information. Can furnish you more copies of said pamphlet, if you can distribute them to advantage. I also send you six copies of the blank for immediate notice of the appearance of any case of small-pox in your county; and also six copies of the blank for weekly reports of this disease, to be sent to this office. You will please observe the instructions in reference to the use of these blanks. I hope you will keep me promptly informed in reference to the progress of this threatened epidemic, as well as any cases that may come to your knowledge, and I will be pleased at any time to give you my advice, or render you any aid in reference to this matter.

Yours truly,

J. W. REDDEN, *Secretary.*

On January 7, I received an official communication from Dr. Bariteau, County Health Officer of Decatur county, informing me that a young man, whose family lived in Oberlin, Decatur county, came from Denver during the second week of December, 1888, having been on a visit to that city, and returned home and was taken sick; had considerable fever, followed in a day or two by small pimples on his face and other parts of the body. "A few days subsequently I was called again to see the patient, and found him broken out from head to foot, and a sight to behold. In two days these pimples developed into papules." During his sickness, all of his family were more or less in the room with him; his brother who had been attending school at Topeka returned home, and in nine days from the date of his return home he was taken sick with similar symptoms; and the mother was also taken sick about the same time. Another son, wife and two children from the country visited the same family while the first young man was sick, also a young man from a hotel in Oberlin made a social visit to the young man who was sick; all of these persons, within two weeks from the time they made their first visit to this house, were taken sick with similar symptoms, as fever, pains, chilly sensations, increase of temperature, etc. Other physicians were called to see different ones sick, and pronounced the disease variola, although Dr. B. still had doubts as to the correctness of this diagnosis. However, as there was a possibility of his diagnosis being erroneous, he acted very prudently in the matter, and wrote me as follows:

"I have established quarantine at the house, and nurses have been engaged, and precautions taken against its further spread, whatever it is. I have suspended the public schools for one week to await further developments. A new supply of fresh vaccine virus (bovine) has been ordered, and I will begin vaccinating on Tuesday. Please reply as to probable diagnosis, as you can judge from my history of the original and subsequent cases."

I wrote him at once that the disease was unquestionably small-pox, and sent him a supply of the pamphlets on "Small-Pox; its Restriction and Prevention," and directed him to have conference with the county commissioners, and enforce strict and thorough vaccination and disinfection. The following communication was received from him the next day:

OBERLIN, KAS., January 8, 1889.

J. W. Redden, M. D., *Secretary State Board of Health, Topeka, Kas.*—DEAR DOCTOR: No new developments and no new cases of our "What is it" disease. Those already



affected are doing nicely. The first patient—the one I treated—is well; face clearing off finely. This week will probably tell the story as to future attacks, and if an epidemic should break out we will be in a pretty bad fix; but it is over ten days since the last new case was developed, and it begins to look as though there would be no more.

Respectfully,

A. W. BARITEAU, *County Health Officer.*

When I wrote him as follows:

TOPEKA, KAS., January 9, 1889.

A. W. Bariteau, M.D., Oberlin—DEAR DOCTOR: Your favor of the 8th received. Your last diagnosis is undoubtedly correct, and you are pursuing the proper course, and should maintain a strict, rigid and thorough quarantine, isolation, disinfection, and vaccination. Write me promptly upon the occurrence of any other cases, and their nature. Keep an accurate and correct history of all cases, so that you can make a complete report at the close of the epidemic. I can send you more of the pamphlets on "Small-Pox; its Restriction and Prevention," should you need them.

Should the disease have a tendency to spread rapidly, write or telegraph me promptly, and if you think necessary, we will have some member of the Board visit you and confer with you as to the measures to be adopted.

Your prompt attention will oblige.

Yours truly,

J. W. REDDEN, *Secretary.*

I received a telegram on the 11th, requesting some member of the Board of Health to go at once to Decatur county. I telegraphed immediately to Dr. Guibor, of Beloit, to go to Oberlin, have conference with the health authorities, examine patients, and see that quarantine and all precautionary measures were being enforced, and report me in full. Dr. Guibor made the official visit, and after his return home, made a full report to this office. Said report will be found printed on subsequent pages, under the division of "Small-Pox and Other Contagious and Pestilential Diseases." The following communication was then sent to Dr. Bariteau:

TOPEKA, KANSAS, January 17, 1889.

A. W. Bariteau, M.D., Oberlin—DEAR DOCTOR: Your letter of the 15th received. Dr. Guibor made his report to this office, in reference to his official visit in conference with you as to the small-pox cases, and the management of same.

There was a special meeting of the State Board of Health held here yesterday, and they ordered me, as the executive officer and Secretary, to instruct you to enforce strict and rigid quarantine and isolation of all persons who are now affected with small-pox or varioloid, as well as those who have been exposed. You shall also order a general vaccination of all persons, both in Oberlin and throughout the county, and use all possible precautionary measures, by way of disinfection, etc.

I dispatched you this morning in reference to quarantine and isolation.

I think it would be desirable, and suggest it for your consideration, that after a conference with the county commissioners and city health authorities, you publish a clear statement of the facts in reference to the cases of small-pox in your papers, and also emphasize the fact that you have established strict and rigid quarantine and isolation of all persons affected with small-pox, as well as those who have been exposed, and that the authorities are using all possible additional precautionary measures, by way of vaccination and disinfection. This course, I am satisfied, will give confidence to the people of adjoining counties, as well as citizens of your own county, and prove a direct benefit to the citizens of Oberlin and Decatur county in every respect.

I am pleased to receive your prompt reports and regular communications, and hope you will continue them until every suspicious case is discharged and the quarantine raised.

Yours truly,

J. W. REDDEN, *Secretary.*

In compliance with instructions from this office, the following proclamation was issued by the health authorities at Oberlin, in reference to small-pox then prevailing in that town:

PROCLAMATION.

The State Board of Health, at a meeting on the 16th inst., in Topeka, have ordered strict quarantine and isolation of all persons in the city of Oberlin who are now affected by small-pox or varioloid, as well as those who have been exposed to the contagion.

Now, therefore, I, Wm. B. Meade, M. D., City Health Officer of Oberlin, Kansas, by virtue of the power in me vested by the laws of the State of Kansas, and in accordance with recent instructions, hereby order all persons in the city of Oberlin to appear before me within five days from date hereof for vaccination, or furnish satisfactory proof of having been recently vaccinated.

All persons failing to comply with the provisions of this proclamation will be reported to the proper authorities and subjected to criminal prosecution.

The time for criticism or doubt as to the existence of small-pox has passed. The precautionary measures to prevent its spread and eradicate the loathsome and contagious disorder are vaccination, quarantine, and disinfection; and every citizen should cheerfully submit to aid the authorities in stamping out and stripping the disease of its loathsome terrors.

OBERLIN, KANSAS, January 21, 1889.

On March 12th I received a special report of the history of this epidemic of small-pox at Oberlin and vicinity from Dr. Bariteau, the County Health Officer of Decatur county; which report will also be found on subsequent pages under the division of "Special Reports on Small-Pox," etc.

The prevalence of small-pox had a remarkable influence upon the people in adjoining counties in requiring and ordering general vaccination of the people, especially all school-children, and quarantining of most of the towns and villages against Oberlin. The demand for the pamphlet on "Small-Pox; its Restriction and Prevention" has been unprecedented, and it has been published in most of the county papers throughout the State as valuable information for the people in general, and with beneficial results.

I received the following communication:

MARVIN, KANSAS, January 21, 1889.

*Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kansas*—DEAR DOCTOR: We have one case of varioloid in Marvin; exposed at Oberlin. Patient and attendants are quarantined. All measures to prevent spreading will be taken. I will endeavor to vaccinate and revaccinate all liable to be exposed in any way, and all others who can be persuaded to submit to vaccination. Respectfully,

ISAIAH MILEY, M. D., *County Health Officer.*

A short time since I received information from Dr. Miley that the case was progressing nicely, and he thought the disease would not extend beyond the one case. He promises to send a special report of the case to this office;

when this report is received, it will be printed on subsequent pages under the division of "Special Reports on Small-Pox," etc.

On January 31 I received the following report:

LUDELL, KANSAS, January 30, 1889.

DEAR DOCTOR: There has come to my knowledge a case of varioloid in the county of Rawlins, State of Kansas. The person sick is Rozena B. Reed, a female about 19 years old, who was taken with this disease about the 19th day of January, 1889. The danger of spreading the disease from or into the jurisdiction of other boards of health is very slight, because quarantine and all other precautionary measures have been taken to prevent its further spread.

Respectfully, J. L. CONSTABLE, M.D., *County Health Officer.*

Several days since Dr. Constable wrote that the case was convalescing, with no probability of any other case being developed from it. When he makes his special report of this case it will be published under the division of "Special Reports on Small-Pox," etc.

On February 8th I received the following report:

MOUND CITY, KANSAS, February 7, 1889.

J. W. Redden, M.D., *Secretary*—DEAR DOCTOR: There has come to my knowledge a case of small-pox, in Paris township, in the county of Linn, State of Kansas. The person sick is Mrs. McDowell, who was taken sick with this disease about the 25th day of January. The case has been quarantined and isolated, and vaccination and all other precautionary measures are being enforced.

Respectfully, IRA E. COE, M.D., *County Health Officer.*

As soon as these reports were received, I sent to each county health officer a full supply of the small-pox pamphlet, and urged them to rigidly enforce quarantine and all possible precautionary measures.

On February 20th I received the following communication:

MOUND CITY, KAS., February 19, 1889.

J. W. Redden, M.D.—DEAR DOCTOR: I have just come from the small-pox case I reported a few days ago. Dr. A. W. Rash attended the case; he has never been successfully vaccinated, and has not vaccinated his family. The family where the first case occurred consisted of five persons. The first case came home on the cars, and was taken sick in ten days. In fourteen days from her first sickness all the other four persons came down with confluent small-pox. Now Dr. Rash has it also, and is all broken out with discrete small-pox. I do not know where it will end, as he took no precautions, and never changed his clothes after visiting the cases. His house I have quarantined; the other house (McDowell's) is and has been quarantined against all but the doctor. I will call the commissioners together to-morrow, and endeavor to put a man in the saddle to travel the infected district and ferret out the disease as far as he can, and isolate all the parties suspected. What more can I do? Please send me 100 small-pox circulars, and if you can give me any advice, do so.

Very truly yours, IRA E. COE, M.D., *County Health Officer.*

On March 3d I received from Dr. Coe the following communication:

MOUND CITY, KAS., March 2, 1889.

*Secretary Redden*—DEAR DOCTOR: Our small-pox is confined to two houses, and if proper disinfection is practiced I presume we are all right. Now, under the law,



can I compel the families to have their premises thoroughly disinfected; and in case they should refuse to allow articles boiled or burned as the case may be, and the house properly fumigated, scoured, disinfected and left vacant for a few days, what shall I do? Please let me know as fully as you can, what I can and should do in the matter. I got a letter from one of the commissioners last night, saying that as soon as in my judgment it was safe I should dismiss all the nurses and other persons who were working at the expense of the county. My answer was a little sharp, and I wish you could see it. I first called his attention to the fact that the commissioners were the board of health, assisted by a health officer, whom they appoint, pay, and kick out at will. That I was expecting to employ men to disinfect all things that could be so treated, and destroy the rest—all at the expense of the county. I told him it was hard enough to overcome the prejudice of the citizens when thoroughly upheld by the board, and then asked for instruction. I am going to be no scape-goat for the board, and if I say that things are clean, they will surely be clean.

Yours,

I. E. Coe, M.D., *County Health Officer.*

In reply, I wrote to Dr. Coe, that the County Health Board had the authority, and should fully exercise it in requiring thorough and complete fumigation and disinfection of buildings and persons affected, or who had been exposed, and I hoped he would rigidly execute it.

The County Health Board issued and distributed freely the following proclamation in reference to quarantine, having attached it to the pamphlet on "Small-Pox; its Restriction and Prevention":

#### QUARANTINE PROCLAMATION.

*Special meeting of the Board of County Commissioners held February 20, 1889, for the purpose of considering the advisability of taking steps to stop the spread of small-pox in Linn county, Kansas.*

Whereas, it appears upon the report of Dr. I. E. Coe, the health officer of the local board of health of Linn county, Kansas, that there are a number of cases of small-pox of virulent type in Linn county, Kansas, and that a large number of persons have been exposed to said disease, it is hereby ordered that the said Dr. Coe as such health officer be, and he is by the Board of County Commissioners of said county hereby empowered to effectually quarantine all places where said disease now exists in said county, and to prevent any and all persons known to have been exposed to said disease, from traveling abroad; and that said health officer be empowered to at once dismiss all schools now running in any infected district, and prevent all public gatherings, such as public sales, lyceums, or gatherings for worship in said county; and that said officer be empowered to provide suitable and competent nurses for said persons or families who are now or may become sick of said disease in said county, and to make such other and additional regulations and provisions as said health officer in his judgment may deem necessary.

By order of the County Commissioners.

JAMES GOSS, *Chairman.*

#### DR. COE'S ORDER.

At Mr. McDowell's, in Paris township, there are five cases of small-pox; and in Centerville township, Dr. Rash is also down with it. It seems certain that contaminated persons have traveled to and from the houses where small-pox is known to exist, and mingled with friends and neighbors. In this way many persons have been endangered, and may develop the disease. One contaminated person is liable to infect a whole school, or convey the disease to many others at church, lyceums, public sales, or social gatherings; and for such good reasons, I hereby order and

direct that all schools, lyceums, churches, public sales and public gatherings be immediately discontinued in Paris and Centerville townships for the present, and until further notice.

Isolation, disinfection and vaccination are the only means of prevention, and with these means properly carried out the disease can and will surely be stamped out without further cases becoming developed; and I earnestly request all good citizens to assist the proper authorities in the following:

All persons taken sick should be reported at once. All houses where persons are taken sick should be at once quarantined, and watched for a few days, until the disease shall prove other than small-pox. All small-pox patients strictly quarantined, so none shall leave the house or enter it. To those cases a nurse will be furnished. All persons who have not been vaccinated should immediately have this operation performed; and all who have not been recently vaccinated should be revaccinated. This is almost certain prevention; and of those who have been successfully vaccinated, the disease is of the mildest type, when taken at all.

Earnestly requesting the coöperation and advice of all physicians, and the assistance of the people, who are deeply interested in this matter, I feel certain that we can prevent the further spread of small-pox. I. E. COE, M. D., *Health Officer*.

A few days since, I received another communication from Dr. Coe, informing me that there had been eight cases altogether in Linn county, six at McDowell's and two at Rash's; but all were progressing nicely, with the prospect of recovery; that the quarantine and all other precautionary measures would be rigidly enforced, and he thought the disease would be controlled without the development of any other case.

The special report of Dr. Coe of these cases will likewise be found printed under the division of "Special Reports on Small-Pox," etc.

January 25th I received a communication from Dr. Kirkpatrick, of Bushong, Lyon county, informing me that he had a case he believed to be small-pox. I sent a full supply of small-pox pamphlets, and gave specific directions as to quarantine and precautionary measures; these were strictly observed. The first case was a man named George H—, aged 28 years; came there about three weeks previous from Kansas City, and was never vaccinated. The case developed into small-pox.

February 6th he reported four new cases of small-pox. February 28th I received the following communication from him:

BUSHONG, KANSAS, February 28, 1889.

J. W. Redden, M. D., Topeka, Kas.—DEAR DOCTOR: Received the blanks. Every case of small-pox up to this date has been a pauper case. The County Board of Health and myself could not agree as to fees for my services, and then they employed Dr. Burke, of Emporia, who will, I presume, forward all information if requested. If any cases occur in my private practice, I will forward a weekly record. We have the disease partly under control. The County Board of Health do not furnish the proper or sufficient medical attendance, the physician calling but once a week. I fear we will lose cases from neglect.

The almighty dollar is esteemed higher than human lives by the County Commissioners. In town we have succeeded in confining it to one house, and they will be cleaned and disinfected in a few days; but in the country surrounding the disease is spreading somewhat, it being in three families at this time.

E. KIRKPATRICK, M. D.

Since receiving the above communication, I have received a letter from Dr. Burke, of Emporia, informing me that all the cases of small-pox in Lyon county were under his control, were doing well, and he would see that the quarantine was rigid and all precautionary measures were exercised; and make a special report of all cases, when the last patient was discharged and the disease stamped out.

February 16th, I received the following communication from the County Health Officer of Lane county:

DIGHTON, KAS., February 16, 1889.

*J. W. Redden, M.D., Sec'y State Board of Health*—DEAR DOCTOR: Pamphlets on small-pox received. Will send one-half to Dr. J. F. Bond, of Scott City; he is the City Physician, attending the cases at Grigsby. There is no doctor at Grigsby; has no mayor or officer of any kind; is not incorporated. I think Dr. Bond has been enforcing quarantine, etc., as best he can. I understand, but do not know how true it is, that they had the sheriff out "taking in" the exposed ones who did not want to be quarantined. The mails have been stopped from Grigsby to this place, several days ago; and our mayor has issued a quarantine proclamation against the place. Have tried to get the school board here to make vaccination compulsory, but they don't seem to want to do anything. However, have done considerable vaccination here. One of our M.D.'s, the oldest man of us, has been telling the people here that they can't take small-pox until the pustular stage begins. I consider him a very dangerous man, to say the least.

Yours truly, F. L. ROWND, M.D.

I sent a full supply of small-pox pamphlets to Drs. Rownd and Bond, with full instructions as to quarantine and precautionary measures, and requested daily reports of the disease; but up to this time have heard nothing from them. There being no county health officer in Scott county accounts for this negligence.

Since writing the above, I have received a communication from Dr. Nichols, informing me that the small-pox cases in Scott county were quarantined; each case progressing nicely, with prospect of recovery. Vaccination and other precautionary measures were being observed, and when the last case was dismissed, and no possibility of any other case being developed, he would send a special report to this office of the epidemic.

February 15, I received a communication from Dr. Nye, County Health Officer of Brown county, informing me of the reported existence of small-pox at Reserve, near the Nebraska line. I directed him to make an official visit, have conference with the authorities, examine the cases, and if satisfied it was small-pox, order quarantine and precautionary measures. He reported me the result of his visit, that an epidemic of small-pox was prevailing in the village and vicinity, and requested, through the county officials, that the Secretary make an official visit for conference, investigation, and instruction.

February 27, I received a communication from Dr. Harvey, of Junction City, acting health officer, that small-pox existed in Junction City; that the County Health Officer was sick with it, and that it prevailed in Dickinson county adjoining, where there is no county health officer, and requested me

to make an official visit for conference and investigation, and to order that the quarantine and precautionary measures be more rigidly executed.

March 2, Dr. Johnson reported a case of small-pox in a private hospital in the suburbs of Atchison.

The President of the Topeka Health Board informed me that varioloid existed in the eastern part of Topeka, having been introduced from Mexico by a man named Porter, an employé of the Santa Fé Railroad Company, who came home February 17, sick with varioloid, and went to his own home. Family were immediately quarantined and vaccinated. Family consists of himself, wife, and three children. Since then two of the children have taken sick, one with small-pox and the other with varioloid. The man is nearly well, and the two boys are progressing nicely.

It will thus be seen that since January 1, up to the present date, we have had small-pox in thirteen counties in the State, four of which have no county health officers.

While it is to be regretted that small-pox has secured such a foothold in these different counties, yet we should be impressed with the fact that but for the willing, prompt and thorough measures which the county boards and county health officers enforced in all these instances, its progress and result would have been, no doubt, tenfold as great, with sad and incalculable consequences. Is it not strange, therefore, that even the most skeptical are not convinced of the importance of county health organizations, and should not show a willingness to do everything in their power to establish and maintain such auxiliaries for the prevention of disease and the promotion of public health? Let us cherish the hope that the day is not far distant when this will be true in every county in this progressive State.

Respectfully submitted.

J. W. REDDEN, M.D., *Secretary.*

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#### SECRETARY'S SECOND QUARTERLY (FIFTH ANNUAL) REPORT.

*Mr. President, and Gentlemen:* This is the fifth annual meeting of the State Board of Health. Since the last quarterly session, the Fourth Annual Report of the State Board has been published and distributed; with its contents and merits you are familiar. Over 2,100 of the 2,500 copies have been distributed, mostly to health officers and sanitarians in this and other States. The demand for copies has been more extensive than ever, and letters of commendation are frequently received from leading sanitarians as to the value of the Report in sanitary and educational reform—very many expressing themselves that it compares favorably with the reports from Eastern States.

The general health throughout the State during the past quarter has been good. Although there have been epidemics of measles, scarlet fever, mumps, and whooping-cough, yet generally speaking they have been of a mild type,



easily controlled, and attended with small fatality; attributable to a great degree to the educational labors of this Board in preventive medicine.

The following counties have organized county health boards, under our law, and appointed the following county health officers: Joseph F. Bond, M. D., of Scott City, Scott county, February 1st; A. L. Holloway, M. D., of Hugoton, Stevens county, April 22d; and F. R. Moore, M. D., of Tribune, Greeley county, April 23d.

The following changes have been made in county health officers: A. F. Higgins, M. D., of Greenwood county, to succeed F. W. Watson, M. D.; H. Humfreville, M. D., of Marshall county, to succeed W. H. Clutter, M. D.; Z. T. Harvey, M. D., of Morris county, to succeed D. H. Painter, M. D.; and J. E. Rouze, M. D., of McPherson county, to succeed W. A. Shelton, M. D.

There are at the present time more counties organized under the health law than at any time since the organization of the State Board, being eighty-six in number. The county commissioners as a rule are more in accord with the labors of the county health officers, and give them more encouragement and support than ever before; while the people in general appreciate the labors of the health officers, and are more anxious to obtain literature upon sanitary subjects, and enforce the provisions contained in the various pamphlets issued by the State Board with a view of preventing disease, and suppressing epidemics. More supplies are being ordered by the county health boards, and more favorable letters of good results accomplished are being received than ever before.

As a sample of the quarterly reports presented by the county health officers, I select two, and present them herewith as well worthy of your consideration; one from the eastern, and the other the western part of the State, as follows:

GARNETT, KANSAS, April 1, 1889.

*To the Honorable Board of County Commissioners:* As health officer for Anderson county, I make the following report from January 1, 1889, to April 1. I issued a notice (I hereby present a copy) and sent to all physicians, undertakers, ministers of the gospel, and furnished them blanks which are furnished by the State, for each to report to the health office. I am pleased to know, so far as I can learn, each party is making reports promptly over the county. I also issued blanks (a copy is hereby furnished) for complaints maintaining a nuisance, to legally notify them to have them removed. From January 1, 1889, to April 1, being the first quarter, there were 15 deaths reported, 8 males and 7 females. During this same time there were 60 births, 26 males and 21 females. The undertakers of the county reported to have sold 39 burial cases during the quarter. The discrepancy existing from the number of deaths and burial cases sold is from the fact that all deaths are not reported, as physicians have thirty days to make their reports, while undertakers have but seven days. During the quarter, 22 couples were married. Perhaps not all marriages are reported, for want of blanks, which will be furnished hereafter.

It was reported we had a case of small-pox in town in February, but it proved to be a mistake. The necessary precaution was adopted to prevent its spread. There were five or six cases twenty miles east of here, in Linn county, but it was legally

quarantined by the State Board of Health, kept from spreading, and promptly stamped out. Throughout the county we had local epidemics of measles and whooping-cough, but in a mild form; no deaths reported from either one. There were no other epidemics or contagious diseases in the county.

I have visited the poor-farm often, and report that it is kept in a clean, healthy condition, and all the inmates well fed and well cared for.

I visited the jail April 6th, and now, since it is repaired, the sanitary condition is good and healthy.

One complaint of nuisance from Greeley was filed, and proper notice given to the parties to remove the same. I apprehend, as warm weather approaches, many complaints will come in, which shall receive prompt attention. Will give advice through the county papers, that all may procure pure water for stock and man to prevent diseases and maintain health.

Respectfully submitted.

J. A. HENNING, M.D., *Health Officer.*

*To the Honorable Board of County Commissioners of Geary County, Kansas:* I herewith submit my report for the quarter ending March 31, 1889. Our county has enjoyed a fair degree of health during the quarter. We have had no epidemic of any kind to contend with; two sporadic cases of scarlatina, two of variola and one of varioloid have come to my notice. Mumps are prevailing in one school district—Hardscrabble—the teacher and several pupils having the disease. There are a few cases of whooping-cough west of town.

Twenty-eight births have been reported to this office during the last quarter; 17 boys and 11 girls. I have also reports of 30 deaths, from the following causes: Blood-poisoning 2, cholera infantum 1, disease of stomach 1, inflammation of bowels 2, pneumonia 4, paralysis 1, old age 4, consumption 4, congestion of brain 1, erysipelas 1, malarial fever 2, typhoid pneumonia 1, pleurisy 2, cause not given 4. This is the season of the year for a general cleaning-up of streets, alleys, yards, wells, and vaults.

If you have reason to believe that your drinking-water is not pure, boil it. Boiling kills all disease germs. The best disinfectant for your dwellings is fresh air and sunshine—nature's great disinfectant—the cheapest and best.

P. DAUGHERTY, M.D., *County Health Officer.*

The following official communications to Attorney General Kellogg in reference to the power of the Board to enforce the law compelling the county commissioners to organize local boards of health, and compel assessors and other local officers to gather vital statistics under penalty, are herewith submitted:

TOPEKA, KANSAS, March 5, 1889.

*L. B. Kellogg, Esq., Attorney General*—DEAR SIR: Inclosed please find two copies of the law creating State and local boards of health, with sections 4, 5, 7 and 9 marked. You will please examine said sections, and write me your official opinion as to the following questions:

*First:* If the county commissioners of any county in the State fail to act as a local board of health and elect a physician as their health officer, what means, if any, can be used to compel them to comply with said sections?

*Second:* Under section 4 and the general act, has the State Board and the Secretary the power and authority to order quarantine and all other necessary and precautionary measures by way of isolation, vaccination and disinfection of any and all cases of small-pox, diphtheria, and scarlet fever, with the view of stamping out

said diseases and prevent the spread of the contagion to other persons, and thus protect the comfort and health of the people?

*Third:* Under sections 5-9 and the general law, has the State Board of Health the power and authority to compel the registration and report of marriages, births and deaths, and the observance of the rules for the transportation of dead bodies; and if so, can it be enforced, with penalty for violation thereof, except as provided in the last two cases; that is, the transportation of dead bodies and the report of deaths?

*Fourth:* Can "physicians, assessors, local boards and others whose duty it is to gather information in relation to vital statistics of the State," as referred to in section 5, be compelled to gather and report such facts, and for failure to do so be compelled to comply therewith under penalty?

Your prompt attention will oblige. Yours truly, J. W. REDDEN, *Secretary*.

TOPEKA, March 15, 1889.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas.*—DEAR SIR: I have the honor to acknowledge the receipt of your favor of the 5th instant. In response to your first question, as to whether local boards of health can be compelled to elect a county physician under the law providing for the organization of State and local boards of health, if in their judgment such officer is not necessary, and a physician is not needed, I respectfully submit: The law in its terms is mandatory upon the county commissioners, and requires them to act as local boards of health for their respective counties, and also requires them to elect a physician, who shall be the health officer of the board and *ex officio* a member of said local board of health. But no penalty for a neglect or violation of this duty is provided by the statute relating to the organization of the State Board of Health.

As to your second question, whether the State Board of Health and its Secretary have the power to quarantine, I respectfully submit that no such power appears to have been given the Board under the law. The power to order quarantine is proper and necessary to the discharge of the duties of the Board contemplated by statute, but the authority is not given. The law is defective in this respect. It ought to be amended and strengthened.

As to your third question, whether the State Board of Health has the power to compel registration and reports of marriages, births, and deaths, I hold that under section 5 the only rules that they can establish that will subject the parties to a punishment, would be in regard to the transportation of dead bodies.

As to your fourth question, whether physicians, assessors, local officers and others whose duty it is to gather information in relation to vital statistics of the State, as referred to in section 5, can be compelled to gather and report such facts under penalty, I respectfully submit that no penalty is provided, except in the case of physicians failing to keep a record of the deaths occurring in their practice, or that may come to their knowledge. In all such cases a fine of \$10 is provided by statute for each and every offense in failing to keep such records of deaths, and in failing to report the same to the local board of health where the same occurs, at the time and in the manner provided by the State Board of Health.

Yours respectfully, L. B. KELLOGG, *Attorney General*.

TOPEKA, April 11, 1889.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kas.*—DEAR SIR: Your favor of the 5th ult. was duly received, and on the 15th ult. a reply thereto was prepared in this office; but there being a question in my mind as to what remedy, if any, there is to compel county commissioners to elect in their respective counties a physician as the health officer of the local board of health, the opinion was temporarily laid aside for further consideration. While the law is mandatory in form,



if it was in fact, the remedy by mandamus would lie to compel the boards of county commissioners to appoint these health officers; but upon reflection, I very seriously doubt whether the board of county commissioners could be compelled by mandamus to perform this duty, because it is one involving the exercise of official judgment and discretion on their part, and would come within the law as declared by the Supreme Court in the case of the Dwelling-House Insurance Company vs. D. W. Wilder, as Superintendent of Insurance, in which the opinion was filed in the Supreme Court on January 5, 1889. I therefore inclose you the opinion of March 15th with this.

Yours respectfully, L. B. KELLOGG, *Attorney General*.

The following communication from a member of this Board, Dr. Swallow of Valley Falls, and the reply thereto, are herewith submitted, believing that the matter contained therein is of considerable importance. It relates, as you will readily see, to *hydrophobia*, which is a disease that requires prompt and radical remedies. Not hearing anything further from Dr. S., I presume that the measures he adopted were radical and effectual:

VALLEY FALLS, KANSAS, May 21, 1889.

J. W. Redden, M. D., *Secretary, Topeka*—DEAR DOCTOR: We are having an epidemic of hydrophobia in this town and vicinity. My dog was bitten on the morning of the 1st inst., and became violently rabid on the 19th inst., at which time I had him shot. I know of three other cases, and about fifteen or twenty more bitten by the same dog that bit mine. The Mayor refuses to do anything to prevent its spread. Can the State Board do anything? Notify me at your earliest convenience what to do, if anything.

I am, respectfully, FRANK SWALLOW.

TOPEKA, KANSAS, May 24, 1889.

Frank Swallow, M. D., *Valley Falls*—DEAR DOCTOR: Your letter of the 21st received while absent from the city or would have been answered promptly.

After conferring with the Executive Committee, we have concluded that you should direct the Mayor that it is his duty to have all dogs immediately killed, as soon as they present any symptoms of hydrophobia.

Hoping that no person may suffer from the Mayor's inexcusable delay,

I am, very truly yours,

J. W. REDDEN, *Secretary*.

The following communication from the County Health Officer of Montgomery county, and the reply thereto, are upon the same subject—hydrophobia—and are worthy of consideration:

ELK CITY, KAS., June 5, 1889.

J. W. Redden, M. D., *Sec'y State Board of Health, Topeka*—DEAR DOCTOR: Two weeks ago last Sunday, a dog supposed to have hydrophobia was killed in Elk City by Marshal J. P. Morgan. The next day, Monday, Mayor S. B. Davis ordered the marshal to kill all dogs found on the street not muzzled; after two days from date of order, hydrophobia developed in two or three dogs and they were killed. Two cows supposed to have the disease have since died. Yesterday, in company with veterinary surgeon Burdick, I visited the farm of Uri Coy, near town, on which there was a sick horse, supposed to have hydrophobia. The horse was wild and furious, frothing at the mouth, and biting himself and everything he came in contact with. In the evening he had one convulsion after another in rapid succession, and at 9:30 was ordered shot.

This horse had been loose in a pasture containing five horses and fourteen cows. One horse is known to have been bitten by him, and seven cows show marks of violence, probably inflicted by the horse. One has a horn crushed and a bite on shoul-

der; one has tail off, and another with tail almost off. Others have been bitten along the back.

I have stopped the use of milk from cows in this pasture, and forbidden the removal of animals from this pasture or others being added to their number.

Do you think there is danger in using milk from these cows, and do you think the horse will convey the disease to other animals?

Any advice will be kindly received. Yours very truly,

J. T. DAVIS, *County Health Officer.*

TOPEKA, KANSAS, June 7, 1889.

*J. T. Davis, M. D., Elk City*—DEAR DOCTOR: Your letter of the 5th received. I think you are pursuing the wise and proper course in reference to the quarantining of the animals in the pasture, and preventing the use of the milk from the cows. This course should be continued, and every animal should be killed as soon as it manifests any symptoms of hydrophobia. There is unquestionably danger from the use of milk from the cows.

As soon as the disease is suppressed, and all the animals are killed or get well, write me a special report, with all the facts of interest bearing upon the subject, that I may file it for publication in the next Annual Report. Your special attention will oblige.

Yours truly,

J. W. REDDEN, *Secretary.*

From these communications, and information received from other sources, this disease seems to be of unusual prevalence in several localities in this State, and of a grave type.

The following correspondence between the County Health Officer of Cloud county and the Secretary and Chemist of the State Board, in reference to the analysis and microscopical examination of water from the city wells of Concordia, contains matters of special interest to the inhabitants of all cities who desire to secure as pure water as possible, and to use all proper measures to enforce their wishes in this respect:

CONCORDIA, KANSAS, April 15, 1889.

*J. W. Redden, M. D.*—DEAR DOCTOR: We are in dispute in our city about the purity of our city water supply—some claiming that the water is contaminated by the drainage of the city's vaults; some claim that the water makes them sick whenever they use it.

Calling your attention to the resolution passed by the State Board on July 2, 1888, I would ask you what amount of water should be sent, and to whom sent; and will the examination be free if ordered by me as County Health Officer for Cloud county? Would ask that the result of the examination be returned to me in behalf of this city at the earliest date.

Please let me know at once what course to pursue, and oblige.

Yours truly,

L. D. HALL, M. D.

CONCORDIA, KANSAS, April 18, 1889.

*J. W. Redden, M. D.*—DEAR DOCTOR: I send by express to Dr. Reid Alexander tomorrow morning one gallon sample drinking-water direct from our city wells. Wells are ten in number, thoroughly tubed with iron gas-piping, 45 feet deep, obtaining water from gravel stratum, 500 feet from Republican river; and you will see by accompanying map the relative distance from city sinks and vaults. The diameter of wells is 6 or 8 inches. The water was pumped directly out of the wells by city pumps; distance about 60 or 70 feet. It is claimed by some of our city council and others that the river is liable to affect the water. I refer you to the

map for the position of the wells and their proximity to the river and dam; also the city. The red marks on the map indicate the deeper sinks and cess-pools of the city.

Please send accurate statement of the analysis, and oblige.

Yours truly,

L. D. HALL, M. D.

TOPEKA, KANSAS, April 24, 1889.

Analysis of sample of water from Concordia city wells:

Grains per  
U. S. gallon.

Organic matter.....	.371
Silica.....	.587
Alumina and iron oxide.....	.175
Bicarbonate of calcium.....	17.720
Bicarbonate of magnesia.....	1.064
Sulphates of sodium.....	1.356
Bicarbonate of sodium.....	.693
Chloride of sodium.....	4.860
Total solids.....	26.826
Chlorine (combined).....	2.933

Parts per million.

Free ammonia.....	.109
Albuminoid ammonia.....	.227

Microscopic examination: Infusoria.

This is an impure and unwholesome drinking-water, owing to the per cents. of albuminoid and free ammonia present. If it is used as a drinking-water it should be previously boiled and filtered.

REID ALEXANDER, M. D.,

*Chemist and Microscopist of Kansas State Board of Health.*

CONCORDIA, KAS., April 29, 1889.

J. W. Redden, M. D.—DEAR DOCTOR: Yours of the 25th at hand. The analysis is somewhat surprising as to albuminoid ammonia; other analysis is altogether satisfactory, and is above the average drinking-water of the health resorts of the country. As to lime, it is comparatively free when we take into consideration the analysis of Saratoga Springs with their 131-739 and 143-393 grains per gallon—ours only 17.720. The albuminoid in our city water, while very undesirable, is a very small fraction of poison, and in high dilution discounts homeopathy a long ways. It seems to me that the analysis hardly justifies the conclusion of yourself and Dr. Alexander. Please refer to the analyses of Saratoga Springs, N. Y., Bethesda Springs, Wis., Hot Springs, Ark., and many other springs and artesian wells, and I think you will conclude that our city water is fairly good. However, excuse me, Doctor, for any apparent criticism; we feel very thankful to yourself and Dr. Alexander for the analysis. For my own satisfaction I would like to have a more elaborate statement of your opinion on the impurity of the water.

Yours very truly,

L. D. HALL, M. D., *County Health Officer.*

CONCORDIA, KAS., May 6, 1889.

J. W. Redden, M. D.—DEAR DOCTOR: I would like to have your opinion, and also Dr. Alexander's, as to the possibility of our city wells being contaminated by the river, which is some five hundred feet from the wells, or the privy vaults, most of which are two thousand feet distant. The wells, as stated before, are 45 feet deep, in sand and gravel at bottom, tubed with heavy gas-pipe 6 inches in diameter, screw joints, air-tight from pump engine to bottom, except last joint, which is strainer.

Some of our citizens claim that the river affects the wells, and others that the cess-pools and privy vaults are the cause of the free ammonia and albuminoid ammonia. Our physicians as far as heard from do not believe it. Your opinion and Dr. Alexander's will be thankfully received by our citizens.

Yours truly,

L. D. HALL, M. D., *County Health Officer.*

TOPEKA, KANSAS, May 16, 1889.

*Dr. J. W. Redden, Topeka, Kansas*—DEAR DOCTOR: AS I am not familiar with the location of the Concordia wells, it is impossible for me to say from just what source they receive their impurities. If the bottoms of the wells are on a level with or below the cess-pools, the distance of one thousand feet would not protect them from contamination unless the water in the wells was taken from below an impervious stratum, as all water above this point is surface drainage. It may be that the water above the city in the river is better than the water in the wells.

There was no objection made to the mineral constituents of this water; it was the per cents of free and albuminoid ammonia that it contained. Our best authorities agree that where a water is suspected of containing animal impurities, that .15 of one part in a million of albuminoid ammonia is sufficient to condemn it.

Very respectfully, REID ALEXANDER, M. D.,  
*Chemist and Microscopist of the Kansas State Board of Health.*

TOPEKA, KANSAS, May 17, 1889.

*L. D. Hall, M. D.*—DEAR DOCTOR: Your two letters of April 29 and May 6 were handed to Dr. Alexander to answer. In consequence of his absence from the city the delay has been much longer than it would have been. Inclosed you will find a copy of the reply of Dr. Alexander. I think his views are proper and correct.

If your municipal authorities and the citizens are not satisfied with the examination and analysis made by the State Board of Health, of course they can have samples of the same kind of water examined by other competent and experienced chemists.

Hoping this will be clear and satisfactory, I am,

Yours truly,

J. W. REDDEN, *Secretary.*

The following communication from the President and Secretary of this Board in reference to an endemic at the Soldiers' Orphans' Home at Atchison, and the analyses of samples of water and milk from said institution, are herewith submitted:

ATCHISON, KAS., March 27, 1889.

*J. W. Redden, M. D.*—DEAR DOCTOR: I will send you by express, at noon to-morrow, samples of the well- and spring-water which supply the Soldiers' Orphans' Home here; also a sample of the milk. Hope there will be enough money on hand to pay for the analyses of these. I was called to the Home this afternoon, and found about three dozen of the inmates vomiting and cramping. About half of these have diarrhea; but all have the pain or cramp in the stomach, and vomiting, with more or less burning sensation in the stomach. A number of these patients vomited blood. My opinion is that the milk of cows that at times drink the waste from the sewer is the cause of this trouble—although some who are sick did not drink of the milk. This is the second time they have been affected this way in the past six weeks. Have milk analyzed at once, and oblige. Yours, etc., G. H. T. JOHNSON.

TOPEKA, KAS., April 3, 1889.

*G. H. T. Johnson, M. D., Atchison*—DEAR DOCTOR: Inclosed please find the analyses and examinations of the two samples of water and one of milk sent from the Soldiers' Orphans' Home, with the result—no doubt entirely different from what was suspected. Dr. Alexander informs me that the samples of water were not numbered, which was well and which spring, but supposed from the analysis "No. 1" was spring-water.

Will be pleased to hear from you at any time.

Very truly yours,

J. W. REDDEN, *Secretary.*



The following are the analyses and examinations of the two samples of water and one of milk from the Soldiers' Orphans' Home at Atchison:

TOPEKA, KANSAS, April 2, 1889.

SAMPLE OF WATER No. 1.		Grains per U. S. gallon.
Organic matter.....		.010
Silica.....		.098
Alumina and iron oxide.....		.175
Bicarbonate of lime.....		3.482
Bicarbonate of magnesia.....		1.617
Sulphates and bicarbonates of soda and potash.....		3.422
Chloride of sodium.....		1.636
Total solids.....		10.440
Chlorine (combined).....		1.160
		Parts per million.
Free ammonia.....		.092
Albuminoid ammonia.....		.067
Microscopic examination: Infusoria.		

This is a wholesome drinking-water, of good organic and great mineral purity.

REID ALEXANDER, M. D.,

*Chemist and Microscopist of Kansas State Board of Health.*

TOPEKA, KANSAS, April 2, 1889.

SAMPLE OF WATER No. 2.		Grains per U. S. gallon.
Organic matter.....		.348
Silica.....		.124
Alumina and iron oxide.....		.287
Bicarbonate of lime.....		5.950
Bicarbonate of magnesia.....		2.133
Sulphates and bicarbonates of soda and potash.....		7.755
Chloride of sodium.....		1.963
Total solids.....		18.560
Chlorine (combined).....		1.392
		Parts per million.
Free ammonia.....		.078
Albuminoid ammonia.....		.114
Microscopic examination: Infusoria.		

The amount of organic matter and albuminoid ammonia is slightly above the standard established by conservative chemists for wholesome water. While not sufficient to condemn, it certainly renders the water suspicious. The mineral ingredients are excellent.

REID ALEXANDER, M. D.,

*Chemist and Microscopist for the Kansas State Board of Health.*

TOPEKA, KAS., April 2, 1889.

ANALYSIS OF SAMPLE OF MILK.		
Fats.....		4.00 per cent.
Solids not fat.....		9.50 "
Total solids.....		13.50 per cent.
Water.....		86.50 "
Total.....		100.00 per cent.
Mineral ash.....		.70 "
Nitrates and nitrites.....		None.
ASH CONTAINED.		
Chloride of soda.....		48.20 per cent.
Lime.....		23.60 "
Magnesia.....		3.20 "
Iron oxide.....		Trace "
Phosphoric anhydride.....		24.30 "
Sulphuric anhydride.....		.70 "
Total.....		100.00 per cent.

Microscopic examination shows absolute freedom from impurities and indications of pollution. This is a very pure, healthful milk, rich in fats and solids.

REID ALEXANDER, M. D.,

*Chemist and Microscopist for the Kansas State Board of Health.*

A communication was received from Dr. Jenney, County Health Officer of Saline county, requesting chemical and microscopical examinations of a sample of water from Salina, about which there was a controversy as to its purity. Said sample, under the direction of the State Board of Health, was sent by Dr. Jenney, according to resolutions formerly passed by this Board, to Dr. Alexander, Chemist of the State Board, who made the analysis and examination required. Said report of Dr. Alexander is as follows, a copy of which was sent to Dr. Jenney:

TOPEKA, KANSAS, June 12, 1889.

ANALYSIS OF WATER FROM SALINA.		Grains per U. S. gallon.
Organic matter .....	Traces.	
Silica .....		.314
Alumina and iron bicarb.....		.698
Bicarbonate of lime.....		18.720
Bicarbonate of magnesia.....		3.050
Soft salts.....		8.820
Chloride of sodium.....		5.518
Total.....		37.120
Chlorine (combined).....		3.353
Sulphuric acid (combined).....		5.802
		Parts per million.
Free ammonia.....		.086
Albuminoid ammonia.....		.032
Bi-sulphate of carbon.....		Considerable.
Light carburetted hydrogen.....		"
Nitrates.....		"
Microscopic examination: Infusoria.		

The sediment was precipitated sulphide of iron, alumina, and carbonate of lime. The freedom from *natural* organic impurities and both free and albuminoid ammonia shows this to be a naturally pure water.

The excess of chlorine, sulphuric anhydride and nitrates, and presence of light carburetted hydrogen and bi-sulphide of carbon, are due to the absorption of the diluents and impurities formed in the production of gas, and are in sufficient quantity to condemn the water for potable purposes.

REID ALEXANDER,

*Chemist and Microscopist for Kansas State Board of Health.*

Small-pox has been unusually prevalent in most of the States of the Union. Since our last meeting, I have received the following interstate notifications:

Dr. Pelletier, Secretary of the Provincial Board of Health of Montreal, under date of April 13th, reports that three cases of varioloid had occurred at Lyster, county of Megantic. Origin not yet ascertained. Precaution taken: Vaccination, and house quarantined.

Dr. Lee, Secretary of the Pennsylvania State Board of Health, under date of May 9th, reports: Three new cases of small-pox at Nanticoke, county of Luzerne. Persons are residents, and the disease originated from cases previously reported. Precautions taken by free vaccination, and isola-

tion in pest-house. Under date of May 21st, he reports also two new cases of small-pox at Nanticoke and two at Wilkesbarre. All residents. The origin of the disease at Wilkesbarre is by importation from Nanticoke. Following precautions have been taken: Vaccination, isolation, and disinfection.

Dr. Probst, Secretary of Ohio State Board of Health, reports as follows:

"At this time there are known to us five centers of infection for small-pox in Ohio, and it is possible other cases exist which have not been reported. Near New Washington, Crawford county, there are five cases, and two have died of the disease; there is one case at New Holland, Pickaway county; one at North Solon, Cuyahoga county; one at Oberlin, Lorain county, and one at Ashtabula, Ashtabula county. At Oberlin, before the disease was recognized, over 1,200 students in the Theological Seminary were at a lecture attended by a patient; and at Ashtabula, children from the patient's house attended school for several days before the facts were made known to the Board of Health. Every precaution is now being taken to prevent the disease spreading from these cases."

Dr. Baker, Secretary of Michigan State Board of Health, under date of May 28, reports as follows:

"It becomes my duty to inform you that two cases of small-pox exist in Michigan, one at Detroit and one at Battle Creek. The person sick at Detroit is Don Lewis, a resident; origin of the disease unknown. The Battle Creek case is in a Polish family recently come from Detroit or Canada. The measures taken to restrict are the removal of the Detroit case to the city hospital, and the immediate isolation of the family in which the Battle Creek case occurred. The danger of the disease spreading is not great."

Dr. Rauch, Secretary of Illinois State Board of Health, under date of June 1, reports as follows: "A case of varioloid has been reported at Galesburg. Patient recently arrived from Burlington, Iowa. Every precaution has been taken by the local authorities to prevent spread." Also, under date of June 11, he reports as follows: "A case of small-pox has been reported at McLeansborough; origin unknown. Vaccination will be generally observed, and precautions taken to prevent contagion."

Small-pox has been more prevalent than usual in the State of Kansas. It has prevailed since the beginning of the year in 21 counties, as follows: Lyon, Harvey, Jefferson, Cowley, Riley, Geary, Greenwood, Atchison, Decatur, Norton, Linn, Brown, Dickinson, Morris, Bourbon, Rush, Phillips, Scott, Shawnee, Rawlins, and Butler; making its appearance lately in the latter county, but thus far has been confined to one family, which is under strict quarantine, and the health authorities, through the strict precautionary measures that are being enforced, expect to stamp it out without any further extension of the disease.

Special, full and very instructive reports of these epidemics have been prepared by the county health officers and attending physicians in the different counties, and are herewith submitted.



The following communication in reference to the case of small-pox at Perry, Jefferson county, and its successful management, is of special interest:

PERRY, KANSAS, April 5, 1889.

*J.W. Redden, M.D., Secretary*—DEAR DOCTOR: This morning I report to you a case of small-pox in the city of Perry. J.H. Thompson, a citizen of Perry, a stone-mason by trade, has been for some time at work on the capitol building, in Topeka. He came home Wednesday morning in a box car, freight train. It was reported early that morning that he was broken out with small-pox, creating much excitement. The mayor came to me at 8 o'clock, asked me to visit him, and report his condition at 9 o'clock. I visited him; his wife had prepared a bed in an out smoke-house in the rear of the dwelling, to keep him from the children, five in number. As soon as she could, she sent the children from home. I found him thoroughly covered with pustules, which he said first began to appear on the skin Sunday morning; he was at this time feeling quite comfortable, having passed the first stage of the disease. Last night he rested quite well, and this morning he is doing well. I vaccinated the mother and all the children; the children were sent to the country, and his wife is taking care of him; she is likely to have varioloid. I reported a well-defined case of varioloid to the mayor, and the city authorities immediately enforced strict quarantine to prevent any further spread. Yours fraternally, D. SURBER, M.D.

TOPEKA, KANSAS, April 5, 1889.

*Dr. D. Surber, Perry*—DEAR DOCTOR: Your letter of the 5th just received. Regret to learn that a case of small-pox has occurred in your town, but am pleased to learn of the prompt and efficient measures you are taking by way of quarantine, isolation, vaccination, and other necessary precautionary measures. I send you by mail to-day twenty pamphlets on "Small-Pox; its Prevention and Restriction." Use them as you think best.

Hope your city authorities will give you full instructions and authority and complete power to carry out the provisions and rules contained therein. You should make vaccination very thorough in town and country adjoining. I would call your especial attention to the following clause, found on page 3 of the small-pox pamphlet: "When a case appears, immediately enforce strict isolation and quarantine of the patient; and this should be continued for at least two weeks after the recovery of the case, and after the crusts have all separated." You should see that this rule is rigidly enforced. I wish you would ascertain from Mr. Thompson, the street and number of the house in which he boarded while in Topeka, so that we can aid you in tracing up the origin of the disease, and the exposure here. I wish you would keep a full history of the case, and any other cases that may be developed, and write me from time to time as you think proper. In keeping your record of this and any other cases that may occur, you will please note the following facts and suggestions: The origin, time when taken sick, total number of cases, whether varioloid or small-pox, fatality, age, sex, nativity, when vaccinated last, how often vaccinated, how long sick, how long after recovery or from the time the crusts fell off before discharged, what precautionary measures were used to prevent its further spread, and any other facts that you may think worthy of notice.

So that when the disease is stamped out, and all the cases well and discharged, you can prepare a special report covering all these facts and other items of interest, and send it to me that I may file it for publication in the next annual report of the State Board.

Will be pleased to hear from you at any time.

Very truly yours,

J. W. REDDEN, *Secretary*.

The number of cases of small-pox and varioloid of all shades, classes and conditions, that occurred in these counties, were as follows:

<i>Counties.</i>	<i>Cases.....</i>	<i>Deaths.....</i>	<i>Recovered.....</i>
Jefferson.....	1	0	1
Morris.....	6	1	5
Rawlins.....	1	0	1
Rush.....	1	0	1
Phillips.....	1	0	1
Shawnee.....	12	2	10
Butler.....	4	0	4
Scott.....	10	1	9
Bourbon.....	9	0	9
Dickinson.....	7	1	6
Lyon.....	38	3	35
Harvey.....	10	0	10
Cowley.....	2	0	2
Geary.....	7	0	7
Linn.....	8	0	8
Brown.....	80	3	77
Riley.....	5	0	5
Greenwood.....	21	1	20
Decatur.....	53	2	51
Atchison.....	6	0	6
Norton.....	7	0	7
Woodson.....	28	1	27
Montgomery.....	3	0	3
Totals.....	320	15	305

These fifteen deaths occurred either from exposure at the inception of the disease, or complications during its progress. This remarkable showing of less than five per cent. of fatality is largely due to the efficient and prompt measures enforced by the local health authorities under the direction of the State Board of Health.

In consequence of the almost universal vaccination of the people in these 23 counties, and the thorough vaccination in the other 83 counties in the State, the people never were in so good a condition to ward off the approach of this plague and prevent its gaining a foothold in any county.

Let us confidently indulge the hope that the same efficient, prompt and radical measures will be adopted and executed by the health authorities, sanitarians, and the people in general, to accomplish equally as satisfactory results in preventing, controlling and suppressing those prevalent, fatal, and yet unnecessary, maladies of diphtheria, scarlet fever, typhoid fever, measles, etc., and thus elevate the standard of sanitary reform, and secure the inestimable blessings resulting from preventive medicine.

A special communication from Dr. Jacobs, of Emporia, in reference to small-pox in Emporia and McPherson, is herewith submitted as worthy of careful thought, and will be published among the "Special Reports."

The correspondence, regular and miscellaneous business of this office is rapidly increasing, and is another evidence that the people in general appreciate the labors of health boards in adopting and enforcing all measures of an educational and sanitary nature which will add to the comfort, happiness and prosperity of individuals, families and communities; and may the next year's labors of this Board, and each individual member

thereof, be noted for its labors and advance in all that pertains to the welfare and advancement of every portion and every class throughout this entire growing and prosperous State.

Respectfully submitted.

J. W. REDDEN, M.D., *Secretary*.

TOPEKA, KANSAS, June 13, 1889.

### THIRD QUARTERLY REPORT.

TOPEKA, KAS., September 16, 1889.

*Mr. President, and Members of the State Board of Health*—GENTLEMEN: Since the last regular meeting of the Board there have been but three changes of county health officers. In June, Dr. F. K. Dabney was appointed County Health Officer of Cheyenne county, in place of Dr. E. L. Waterman; in July, Dr. Geo. L. Neal was appointed County Health Officer of Finney county, in place of Dr. F. Dulin; and in August, Dr. J. S. Spangler was appointed County Health Officer of Pottawatomie county, in place of Dr. D. F. Rodgers. There are now eighty-six active county health organizations out of the 106 counties in the State, and most of the other counties are doing much good and progressive work in sanitary matters, and freely distributing the circulars and pamphlets issued by this Board, with the view of educating the masses of the people in preventive measures, and how to avoid contracting and spreading the various forms of contagious, infectious and pestilential diseases.

It is a gratifying fact that from all sections of this State comes the welcome information from health officers, prominent physicians and observing sanitarians, that the past summer has been the most healthy quarter we have had for several years past, and more free from epidemics or fatal types of disease in every section.

I will refer briefly to the two quarterly reports of county health officers that are of special interest. First from Jewell county, which is as follows: During the quarter ending July 1st, there were reported to the County Health Officer 80 cases of measles, with 1 death; 17 cases of scarlet fever, with 1 death; 5 cases of cerebro-spinal meningitis, with 1 death; 8 cases of diphtheria and croup, with no deaths; 35 cases of whooping-cough, with 2 deaths; 1 case of erysipelas, and no death; 16 cases of typhoid fever, and 1 death; 1 case of puerperal fever, and 1 death; 27 cases of diarrheal diseases, with no deaths; 15 cases of consumption or phthisis, with 2 deaths; 34 cases of acute lung disease, with 2 deaths; also 1 case of heart disease, 1 of dropsy, and 1 of placenta-previa, all three of whom died; thus showing that there were reported to Dr. Crew, County Health Officer of Jewell county, during the second quarter of the present year, ending July 1st, 242 cases; of these, there are 14 diseases that are very dangerous to public health, with 16 deaths resulting from them. There were also reported 3 still-births, 11 births, and 20 marriages.

Secondly, from Anderson county, as follows:

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I make the following report for the second quarter, from April 1 to July 1, inclusive: Number of deaths, 18; number of births, 56; number of burial cases sold, 36; number of marriages, 15.

The health throughout the county is generally good. No epidemic prevailing of any kind; measles and whooping-cough have nearly abated. I have visited the county poor-farm, and can report that the poor-farm house is kept clean and in a good sanitary condition. The inmates are well cared for and well fed. The county jail is also in a good condition. Complaints are made to this office of nuisances maintained in this city, as well as other towns in the county. I have given them prompt attention, and have five or six of them abated, and working on three or four others. Those nuisances are more or less detrimental to public health, and must be abated. Generally, accurate health reports are sent in. However, a few physicians are not reporting; but I will soon get after them.

I would call special attention of all the citizens of this county to procure and use pure water to maintain good health. Impure water during hot weather is the direct cause of many diseases.

J. A. HENNING, M.D., *County Health Officer*.

The following letter from the Secretary of the Leavenworth Board of Health is interesting, and worthy of record and examination:

LEAVENWORTH, KANSAS, August 6, 1889.

*J. W. Redden, M.D.*—DEAR DOCTOR: Our board has been very fortunate this year in having had two very good sanitary officers. Since May 7 we have abated some four hundred nuisances, and affairs have been managed with such discretion that we had but two arrests. Our city has been very free from epidemic and contagious diseases, and in fact from all kinds of sickness this summer; but at present there are a few scattered cases of typhoid fever, and many cases of whooping-cough.

Generally speaking, the sanitary condition of the city is very good.

Yours very truly,

W. D. BIDWELL, M.D.,  
*Secretary City Board of Health*.

The following abstracts received a few days since in acknowledgment of the receipt of a copy of the Fourth Annual Report are worthy of reference as showing the appreciation of the labors of this Board, both at home and abroad. First, the Mayor of the city of Holton writes:

HOLTON, KANSAS, June 14, 1889.

*J. W. Redden, M.D., Topeka*—DEAR SIR: I have the pleasure to acknowledge the receipt of a copy of the Fourth Annual Report of the Kansas State Board of Health. It is a work containing a great deal of valuable information, and represents a corps of workers highly essential and of the greatest importance for the promotion of the health and welfare of the people comprising this great State. I thank you, and have the pleasure to subscribe myself,

Yours most respectfully,

H. KELLER, JR., *Mayor of City of Holton*.

Second, Dr. C. H. Richards, an associate of my boyhood days, and one of the most prominent physicians of the State of Delaware, my native State, writes as follows:

GEORGETOWN, DELAWARE, June 24, 1889.

*J. W. Redden, M.D., Secretary State Board of Health*—MY DEAR DOCTOR: Have been intending to write you daily ever since you were so kind as to send me your



"State Board of Health Reports." I only wish I had received them earlier, as I can see what a help they would have been in getting up my address for our "Centennial of Medicine." We celebrated the one-hundredth anniversary of our State Society, the 11th, at Dover, the State capital, where it was first inaugurated, and had quite an enjoyable time. Accept my thanks for your kindness, and the congratulations you deserve for your admirable work. You will never receive the credit you deserve for such an amount of labor.

Very truly yours,

C. H. RICHARDS.

On June 20th I received from Dr. Kennedy, Secretary of the Iowa State Board of Health, the following official notice:

"It becomes my duty to inform you of the existence of two cases of small-pox at Galva and Boone, in the counties of Ida and Boone. The disease is in the person of a German woman—an emigrant direct from Castle Garden—and a brakeman exposed through her."

A second communication, also from Dr. Kennedy, under date of July 5th, is as follows:

"There are six cases of small-pox since my last communication, as follows: 4 cases at Jefferson, 1 case at Marshalltown, and 1 case at Spirit Lake; the latter case proved fatal. All the others recovered. The last six cases are members of two families. The origin of the Jefferson case was from Illinois; the Marshalltown case was a child who contracted the disease from her father at Spirit Lake; while the origin of the case at Spirit Lake is unknown. Restrictive and preventive measures adopted. Isolation, quarantine and vaccination enforced."

From Dr. Hewitt, Secretary of the Minnesota State Board of Health, I received the following official communication, under date of July 19:

"I beg leave to inform you that three cases (children) of semi-confluent small-pox have been reported, July 12, by the health officer of Tansem township, Clay county, in this State. First case left Norway May 17, reached New York May 26, Tansem township June 4, sick June 16; not considered small-pox. Isolation and vaccination under the personal supervision of the Secretary of the State Board of Health."

Also from Dr. Hewitt, of date August 2, a notice as follows:

"I hereby inform you that a new case of small-pox has been reported by the health officer in Tansem township, Clay county, this State. Exposed to Tansem family previously reported. A mild case. Isolation and vaccination enforced."

On July 10 I received an official communication from Dr. Kellenberger, County Health Officer of Woodson county, of the existence of three cases of small-pox in one family in Piqua, Woodson county; that the usual precautionary measures had been taken. If possible, would confine the disease to the one family, although several persons had been exposed.

At once I sent him a full supply of small-pox circulars, and gave specific and imperative instructions to quarantine, isolate, vaccinate and disinfect all persons who had been exposed. Two days afterward I received the following communication from him:

YATES CENTER, KANSAS, July 11, 1889.

J. W. Redden, M. D., Secretary Kansas State Board of Health, Topeka, Kas.—DEAR DOCTOR: Your letter and twenty-five pamphlets on "Small-Pox; its Prevention and



Restriction" were received this day. I am informed by wire that there are thirteen cases of small-pox at Piqua, in this county; nine cases are in the little village, and four cases one mile and a quarter in the country—all in the various stages of eruption. All cases are isolated and under quarantine, a guard being stationed to prevent communication between the infected houses, and to supply the wants of the sufferers. There are no physicians in the village, and the outbreak was pronounced varicella by the residents. The cases were mild, and were soon around mingling with everyone before the crusts had fallen off. The contagion from them developed the present thirteen cases. The symptoms being severe lumbar pain, and fever being high, they called in Dr. J. L. Jones, of Neosho Falls, who notified me promptly that he had grave suspicions of small-pox. The following day together we visited three cases in one family of colored people. The father was in the second day of initial fever; the papular eruption with shotted feel appeared the following evening. The mother was in the second stage of eruption, the vesicles presenting the milky opaline appearance. An eighteen-months child was completely covered with pustules, and had been in bed twelve or thirteen days. Danger flags and printed small-pox cards were posted, declaring the infection. The father was a butcher, and Saturday last he was traveling over the country peddling out meat, returning home in the afternoon sick with fever, unable to care for his horses. At the end of the third day of fever appeared the dread eruption. It is hard to predict the possible number that may be attacked within the next two weeks. I understand there is no State law except to give cities power to regulate quarantine. Whilst the city of Yates Center has quarantined against all infected points, it does not protect this little village and its surrounding country from the spread of contagion; exposed persons may circulate at will among those who have never been near the disease, and be the medium of transmission, and they are without law or power to prevent it. Unless you can show some law or power that I can call into action, I can do nothing but post notices and flags declaring the presence of the disease. This much we have done, and will continue to do so, as new cases may appear. Dr. Jones, the attending physician, is vigilant and tireless in his efforts to restrict and prevent its spread. The county board stand ready to do all they can legally do, but it appears that legislation has left the country people wholly unprotected and without means of defense.

I am, your obedient servant,

E. K. KELLENBERGER, M.D., *County Health Officer.*

I replied to the above letter as follows:

TOPEKA, KAS., July 12, 1889.

*E. K. Kellenberger, M.D., Yates Center*—DEAR DOCTOR: Your letter of the 11th just received. You should maintain strict, rigid and thorough quarantine, isolation, disinfection, and vaccination. In enforcing your quarantine, isolation, vaccination and disinfection, enforce very thoroughly the instructions contained in the pamphlet on "Small-Pox; its Restriction and Prevention," copies of which were sent you a few days since. Be sure that the instructions as to thorough vaccination of persons, and disinfection of persons and materials, and the fumigation of property, are strictly enforced; and that all persons be quarantined who have been exposed, and no person be discharged until all danger of communicating the disease is past.

I do not think it will be necessary to send a member of the State Board, unless you should have serious trouble in enforcing quarantine. If this is the case, write me promptly, and I will then send a member of the Board to aid you in enforcing it. Keep me posted as to the developments of the disease. Hope you may be able to stamp out the disease, and have no trouble in enforcing the quarantine.

Very truly yours,

J. W. REDDEN, M.D., *Secretary.*

The following letter was received July 15th, from Dr. Jones, the attending physician, showing what trouble they had to maintain quarantine, and also the necessity of a member of the State Board making an official visit:

NEOSHO FALLS, KANSAS, July 14, 1889.

J. W. Redden, M. D., *Secretary State Board of Health, Topeka, Kansas*—DEAR DOCTOR: I have just received your letter written to Dr. Kellenberger of Yates Center in relation to the small-pox quarantine in Piqua. I am in charge representing the County Board of Health. I need, and have asked for, assistance from the county officials, but so far have failed to obtain it. Nearly every one seems scared out of his senses. Flags and cards have been torn down, and the quarantine regulations are being violated. Some believe that we are trying to kill the town; that no small-pox exists. Come, or send a member *at once*; then I am satisfied we will have but little trouble in the future. Two or three "quack practitioners," who have been treating a case or two, persist in telling the people that the disease is *black measles, black chicken-pox*, etc.; hence all the trouble comes.

I wired you last night; my headquarters will be in Piqua for the present.

Now doctor, send me a man who can recognize *variola* when he sees a typical case. Two new cases yesterday: a total of 14. Act at once.

Fraternally,

J. L. JONES, M. D., *Deputy Health Office in Charge.*

July 15th, I received a telegram from Dr. Kellenberger that they were having some trouble in properly enforcing the quarantine that had been established, requesting that a member of the State Board visit him and have an official conference, with the view of establishing and maintaining quarantine, isolation, etc.

The following dispatch was sent to Dr. Kellenberger, in response:

TOPEKA, KANSAS, July 15, 1889.

E. K. Kellenberger, M. D., *Yates Center*—DEAR DOCTOR: Your telegram of the 15th received. I have just telegraphed Dr. H. D. Hill, of Augusta, a member of the State Board of Health, to go at once to Piqua and investigate the small-pox.

Hope you will be able to enforce quarantine without further trouble.

Yours truly,

J. W. REDDEN, M. D., *Secretary.*

As Dr. Hill was the nearest member to that locality, I dispatched him to go at once, have conference with Dr. Kellenberger, and see that everything possible was done to stamp out the disease at the earliest practicable moment. In answer to which, Dr. Hill telegraphed me that he was on the ground, holding a conference with health authorities, and would rigidly carry out the instructions sent from this office. In reply to his dispatch, I sent the following:

TOPEKA, KANSAS, July 16, 1889.

H. D. Hill, M. D., *Augusta*—DEAR DOCTOR: Your telegram is just received. Accept my thanks for prompt attention. As I had no special order to give you, I did not wire you at Piqua. After having made a thorough investigation of the small-pox and enforced strict and rigid quarantine, you will please make a report to this office, giving the origin of the disease, number of cases, whether small-pox or varioloid, number of deaths, and the precautionary measures adopted to prevent its further spread, and any other suggestions that you may think of interest. Hope you have had no trouble in enforcing strict and rigid quarantine.

Yours truly,

J. W. REDDEN, *Secretary.*

Dr. Hill prepared and sent to this office a very complete and interesting special report of the history of this endemic of small-pox which had prevailed in Woodson county. Said report will be submitted to this Board as an official communication, and made part of the next annual report.

The following two communications from Dr. Kellenberger should convince the most skeptical of the importance of county health boards, their utility, their economical management, and the great benefit their labors confer upon the masses of the people:

YATES CENTER, KAS., July 22, 1889.

*J. W. Redden, M.D., Topeka, Kas.*—DEAR DOCTOR: I report you twenty cases to date. No new developments within the last four days. Since the visit of the State officer have had no trouble in the enforcement of quarantine. The commissioners will provide subsistence and sanitary supplies. Will be able to hold it where it is and stamp it out. The general clean-up and purification shall be absolutely thorough and complete.

Yours truly, E. K. KELLENBERGER, M.D., *County Health Officer.*

YATES CENTER, KAS., August 16, 1889.

*J. W. Redden, M.D., Topeka, Kas.*—DEAR DOCTOR: Have had no new developments in the last two weeks. One death Sunday night, at 10:40; buried Monday, 2 A.M. Have had twenty-seven cases in all. Last four cases developed two weeks ago to-day, one of which died, as above stated; of all attacked, they are by far the worst. Have the disease under control; has not spread from the families first quarantined. A possibility of a few new cases developing in a family where the disease has existed for some time; do not anticipate it, however. Quarantine is as rigid and strict as is possible to make it anywhere. It is almost impossible for it to get away from us.

Yours truly, E. K. KELLENBERGER, M.D., *County Health Officer.*

Without the existence of the County Health Board in Woodson county, and the prompt aid rendered by the State Board of Health, no one can estimate the extent to which this disease would have been communicated, the number of cases resulting, the suffering and disfigurement following, the fatality of cases, and the loss of business.

July 30th, I received the following report from Dr. Charles Williamson, County Health Officer of Washington county: "There has come to my knowledge a case of small-pox in Hollenburg, Franklin township, Washington county. The person sick is Mrs. C. M. Whitback, 25 years old. She came home from Severance, Kansas, July 4th. A few days afterward she complained of feeling unwell, and on July 20th showed unmistakable symptoms of variola. The danger of spreading the disease is not great, from the fact that quarantine and isolation are enforced, and vaccination in general will be ordered by the township trustees."

I sent at once a full supply of the small-pox pamphlets for general distribution, and requested prompt reports if any new cases were developed. No more have been reported up to this time. It is natural to conclude that the disease was confined to the one case, and the contagion effectually destroyed by the prompt and vigorous precautionary measures ordered by the township trustees, and effectually enforced by the County Health Officer.

September 1st I received the following communication from Dr. Davis, County Health Officer, in reference to two cases of small-pox in Montgomery county:

ELK CITY, KAS., August 31, 1889.

*J. W. Redden, M.D., Topeka*—DEAR DOCTOR: Two cases of small-pox were reported to this office yesterday from Fawn Creek, Montgomery county. Owing to a faulty diagnosis, many persons have been exposed. Dr. Mastaman, of Independence, was called the day before yesterday and diagnosed small-pox, and made the report, which I will inclose to you. I have issued the inclosed card, and addressed it to all the physicians in the county. I advised Dr. Mastaman to cause a yellow card to be put up on the front door, on which is printed in large letters the word "Small-Pox." We will do all we can to prevent the spread of the disease. Any advice from you will be gladly received.

Yours truly, J. T. DAVIS, M.D., *County Health Officer.*

The following is the communication to which Dr. Davis referred in his letter:

INDEPENDENCE, KAS., August 30, 1889.

DEAR DOCTOR: Yesterday afternoon I visited Fawn Creek to make an investigation of a case of supposed small-pox, and found a genuine case of the confluent variety. There have been two cases, and many have been exposed. I took the precaution to quarantine, and insist upon vaccination of all parties exposed. In the house where the cases are I vaccinated all the others, some five in number. Everything has been done since I saw the cases to prevent the spread of the disease. These cases occurred in the practice of a certain so-called Dr. B——. The first case was a mild one, and has recovered; but not knowing what the disease was, many of the neighbors were in during the eruptive stage. The first case was up and around helping the neighbors thresh. Dr. B—— has been there every day, and of course is liable to spread it all over the country.

Yours truly, B. F. MASTAMAN, M.D.

The following is a copy of the communication that Dr. Davis sent to every physician in his county:

OFFICE OF THE COUNTY HEALTH OFFICER, }  
ELK CITY, KANSAS, August 30, 1889. }

DEAR DOCTOR: Two cases of undoubted small-pox have been reported to this office from Fawn Creek, and many persons have been exposed; we therefore, in accordance with the rules of the State Board of Health, request you to vaccinate all your patrons not presenting satisfactory evidence of proper vaccination, and all those having recently been exposed to small-pox, whether previously vaccinated or not. Yours truly,

J. T. DAVIS, *County Health Officer.*

The latter part of the spring, a prominent citizen of El Dorado returned home from Oklahoma; in a few days he was taken sick with high fever, pain in back, and soon a slight eruption appeared. The attending physician pronounced it varicella, and proper precautionary measures were not enforced nor observed. A few days subsequently, a young daughter was taken down with similar, but more aggravated, symptoms. The family then became alarmed, and called in Dr. McKenzie (the County Health Officer) in consultation. Dr. M. readily detected the disease, and pronounced it small-pox. At once quarantine, isolation and disinfection were rigidly enforced; but in the meantime the entire family and other citizens were exposed to



the contagion. The entire family, consisting of father, mother, three sons, three daughters, and a female servant, (nine in all,) had the disease in all the various forms. The oldest child—a vigorous and promising young man—was taken down with a malignant and hemorrhagic type on June 23d, and died July 4th.

There were six other cases in five other families, thus making fifteen cases in all, with but one death. The city authorities built a pest-house where all the other cases, outside the Betts family, were taken, quarantined, and taken care of. The disease is now stamped out, and did not spread outside of the town. The disease was contracted in and brought from Oklahoma. The county health officer displayed commendable judgment by his prompt action and efficient management of the cases. He has sent to this office a very interesting and complete special report, which is filed, and will be presented as a communication to this Board.

During the past spring we had an endemic of small-pox in Topeka, of fourteen cases with two deaths. It was very thoroughly quarantined, and all precautionary measures adopted to stamp it out, on the part of the city health board in conjunction with the County Health Officer, with very satisfactory results. Have just received a special report from Dr. Williamson, the County Health Officer, giving full particulars of said cases, which will be presented to this Board as a special communication, and filed for publication.

The following communication, from the County Health Officer of Washington county, contains several facts worthy of consideration and record:

WASHINGTON, KANSAS, July 16, 1889.

*J. W. Redden, M.D.*—DEAR SIR: Our County Commissioners in a spasmodic fit of economy have notified me to discontinue my services as Health Officer, although the salary is but \$100 per year, out of which I pay my own postage, and if necessary, make my trips to look up nuisances when notified. Their apology is that the law is imperfect—forgetting that it has taken in Europe and America centuries to reach our present understanding of sanitary work, while it has lessened the mortality in all diseases by removing the cause. It is not the first time in Kansas history that county commissioners have assumed legislative functions. The statute is very positive, and says that the commissioners *shall* appoint a health officer: of course they could freeze him out on the salary question. It is a matter of surprise to me that intelligent men, when they take into consideration the work done by the State Board of Health and the county health officers, do not appreciate its value—for to the health reports the people owe the fact of the legislation that prevents the poisoning of the streams, the prevention of the spread of small-pox (variola), quarantine and isolation of cases of scarlet fever, diphtheria and other malignant and contagious diseases: even in this county (Washington), two years ago, with hundreds of cattle dying with splenic or Spanish fever in the heat of summer, not one case of fever resulted from it. And yet in the face of this they refuse the paltry sum of \$100 for statistical and other work of the county health officer. Are our people and their lives of less value than cattle? These are facts; now what shall I do in the premises? I am still doing the work, and they have paid me for one quarter in 1889. Shall I drop the matter, or go ahead to the end of the year, and then collect at law my salary if they refuse to pay it?



While I regret the imperfections of the law, it is still the beginning of the end of a work of vital importance to the people, that reaches the home of rich and poor alike. Respectfully yours, CHAS. WILLIAMSON, M. D., *County Health Officer*.

The following letter from Montgomery county is an indication that the labors of the State Board are having an influence in leading municipalities to organize active and efficient health boards, with the view of exercising authority and accomplishing a sanitary work that will result in securing the greatest good for the greatest number of people. It is as follows:

COFFEYVILLE, KAS., August 9, 1889.

J. W. Redden, M. D., *Secretary State Board of Health, Topeka, Kansas*—DEAR SIR: This city has recently enacted a health ordinance, and appointed Drs. J. A. Wood and T. C. Frazier and Mr. H. M. Stewart a Local Board of Health. This Board immediately organized by electing Dr. Wood president and H. M. Stewart secretary. We will be glad to receive any documents you may send us which will be of service in our work.

We have almost completed a thorough inspection of the sanitary condition of the city—entering every man's premises, and making a note of what we find. Our city draws its water supply from wells and cisterns. In the opinion of this Board many of our wells are so contaminated with sewage as to be unsafe for drinking purposes. We desire to settle this question by analysis of some specimens of water. Shall we send water to you, or direct to State Chemist? What will be the cost of examination for each specimen?

Presuming that the State Board is interested in knowing what is being done by local effort, we inclose printed copies of ordinance, together with our orders, instructions, and reports.

Any suggestions you may make now or in the future will be gladly received by this Board. Respectfully, T. C. FRAZIER.

The following communication was sent in reply:

TOPEKA, KANSAS, August 12, 1889.

T. C. Frazier, M. D., *Coffeyville*—DEAR SIR: Your letter of the 9th received. Am pleased to learn that your city has organized a Board of Health; also pleased to note the interest you manifest in sanitary matters. I send you by mail to-day a copy of our Fourth Annual Report. Acknowledge receipt.

Inclosed please find a circular containing the resolutions adopted by the State Board of Health in reference to the analysis of samples of water. Should your city authorities wish to have more than one sample analyzed, the State Chemist will analyze them at the same rate which he charges the State Board of Health: for thorough chemical and microscopical examination of each sample of water, \$15. You should send the package by express, prepaying charges, to Dr. Reid Alexander, Topeka, and write me at the time it is sent. Inclosed also find a circular containing directions for the collection of samples of water for analysis.

Yours truly,

J. W. REDDEN, *Secretary*.

To this letter Dr. Frazier replied as follows:

J. W. Redden, M. D., *Topeka, Kas.*—DEAR SIR: We have this day sent by express to Dr. Reid Alexander two samples well-water for analysis. We have inclosed him draft for \$15, to pay for one analysis, and will be glad if you will order one made in accordance with proposition of the State Board.

Respectfully,

CITY BOARD OF HEALTH.

Per T. C. Frazier.

Dr. Alexander made the analyses, and sent me his report. I sent Dr. Frazier copies of the analyses of said water, accompanied with the following letter:

TOPEKA, KANSAS, September 12, 1889.

*T. C. Frazier, M. D., Coffeyville*—DEAR DOCTOR: Inclosed please find a copy of the analyses of the two samples of water sent to Dr. Alexander for examination. Dr. A. has been quite sick and confined to his room, hence the delay.

Hope this will reach you in ample time and prove satisfactory. Regret the delay, but it was unavoidable.

Very truly yours,

J. W. REDDEN, *Secretary.*

The following are the reports of Dr. Alexander as furnished me. The analysis of sample No. 1 was paid for by the State Board, and the analysis of sample No. 2 was paid for by the city authorities of Coffeyville:

TOPEKA, KANSAS, September 9, 1889.

*City Board of Health, Coffeyville, Kas.*—GENTLEMEN: Below please find analysis of sample of water received from you, marked "No. 1," expressed in parts per hundred thousand:

Organic matter.....	.18
Silica.....	.70
Alumina and iron oxide.....	.44
Carbonate of lime.....	20.84
Sulphate of lime.....	6.10
Carbonate of magnesia.....	6.52
Sulphates of soda and potash.....	1.44
Chloride of soda.....	41.20
Total solids.....	77.40
Chlorine (combined).....	34.97
Free ammonia.....	0.015
Albuminoid ammonia.....	0.012
Microscopic examination: Infusoria, alge.	

This is an impure water, containing sewage contamination; probably acquired from being too close to privy vaults.

REID ALEXANDER, M. D.,

*Chemist and Microscopist of Kansas State Board of Health.*

TOPEKA, KANSAS, September 9, 1889.

*City Board of Health, Coffeyville, Kansas*—GENTLEMEN: Below please find analysis of sample of water received from you, marked "No. 2," expressed in parts per hundred thousand:

Organic matter.....	0.22
Silica.....	1.04
Alumina and iron oxide.....	0.80
Carbonate of lime.....	36.29
Sulphate of lime.....	4.82
Carbonate of magnesia.....	10.46
Sulphates of soda and potash.....	1.73
Chloride of soda.....	27.66
Total solids.....	83.02
Chlorine (combined).....	16.77
Free ammonia.....	0.001
Albuminoid ammonia.....	0.004
Microscopic examination: Infusoria, alge.	

This is a very good water from a sanitary standpoint, being free from sewage contamination.

REID ALEXANDER, M. D.,

*Chemist and Microscopist Kansas State Board of Health.*

It is a source of satisfaction that the labors of the State Board are bear-

ing good fruit, and being appreciated in many quarters, as bread cast upon the waters, and seed sown in good ground, that will yield an abundant harvest in the future, in convincing the people of the benefits flowing from preventive medicine, checking epidemics, banishing pestilence, and consequently providing comfort and security for the firesides of thousands of happy homes.

Respectfully submitted.

J. W. REDDEN, M.D., *Secretary*.

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#### SECRETARY'S FOURTH QUARTERLY REPORT.

*Mr. President, and Gentlemen:* Another year of the efforts and labors of the State Board of Health to advance sanitary reforms, and educate the people to appreciate the importance of using all available measures to ward off disease and promote health, will soon terminate. This closes the fifth year since the Board was organized. An examination of the annual reports will give a fair outline of the scope, aim and results of its labors. Its progress has been slow, sure, and regular.

As educators in all sanitary reforms, disseminating valuable and timely information to the people in all sections of the State, (the benefits of which resulting therefrom can never be truly estimated nor fully appreciated,) more pamphlets and circulars containing valuable information as to the restriction, prevention and management of contagious diseases, have been distributed than ever before; while the demand for them from all sections of the State is steadily increasing. This shows, to some extent at least, that the efforts of the Board in this line of labor are bringing forth fruit.

During the present quarter there have been but two changes among the county health officers: Dr. J. K. Miller was appointed County Health Officer of Hodgeman county, in place of Dr. M. F. Rolens, resigned; and Dr. A. R. Knapp has been appointed County Health Officer of Wichita county, in place of Dr. C. F. Cotteral, who moved out of the State.

There are at the present time eighty-six counties with active and efficient health officers; this makes four more counties organized than there were a year ago, and a larger number than ever before. Of the twenty remaining counties, eleven have had county health officers, and have done good work; but felt compelled to resign because the county commissioners would not give them a hearty support, nor allow them even a reasonable compensation for the time and labor absolutely required of them. Some of them labored assiduously and faithfully, and received nothing whatever; while others even had to pay for the stationery and postage required, in addition to giving their time and labor gratuitously. This is entirely wrong in both theory and practice, and should be remedied. But even under these circumstances, their labors are having good results. Of the other nine counties, much benefit has been accomplished through the county clerks in distributing pamphlets and circulars to the people, which are frequently ordered by the

county officers for publication in the papers for general distribution; so that this branch of the work is reaching all sections of the State, and all classes of people, and like seed sown in good ground, will bring forth good fruit.

Drs. Jones and Swallow, as delegates from this Board, attended the sessions of the American Public Health Association at Brooklyn, N. Y. They have prepared a very interesting report, containing a synopsis of the proceedings of said association, which will be submitted at this session of the Board.

During the year there have been added to the library of the Board 62 volumes of reports from State and municipal boards, many of them instructive and valuable; besides a number of pamphlets on practical and interesting sanitary subjects.

The following circulars have been issued from the Secretary's office, samples of which were sent to each member of the Board. First, a circular letter to the county health officers in reference to the blanks for monthly, quarterly and annual reports, to be made to the Secretary, as follows:

[Form 79-A.]

OFFICE OF SECRETARY STATE BOARD OF HEALTH, }  
TOPEKA, KANSAS, December 1, 1889. }

DEAR DOCTOR: I send you by mail to-day, inclosed with the package containing the blanks for your annual report, four blanks for quarterly reports and twelve for monthly reports; these will supply you with blanks for making your monthly and quarterly reports during the entire year of 1890.

You will please carefully note the instructions contained on both the monthly and quarterly blanks, and observe them in making your reports. I hope you will realize the importance and benefit that will result to your county, as well as the State, in making these reports promptly, and as full as possible. By doing so you will very materially assist me in making my quarterly report to the State Board of Health more accurate, complete and instructive, and at the same time give valuable information to the physicians, sanitarians and people generally in the State. They will also be of valuable aid in showing the people at a glance the sanitary work that is being accomplished by the county health officers and county health boards, as well as the State Board of Health. Your prompt attention will be appreciated, and confer benefits upon the people in general.

Very truly yours, J. W. REDDEN, *Secretary, and Executive Officer.*

Another is a pamphlet of invitation and program for the Fourth Annual State Sanitary Convention, to be held in Lawrence on Wednesday and Thursday, December 4 and 5, two thousand copies of which have been distributed in this State and to the health boards and sanitarians in other States, as follows:

INVITATION AND PROGRAM FOR THE FOURTH ANNUAL STATE SANITARY CONVENTION,

*To be held under the auspices of the State Board of Health, in Lawrence, Kas., Dec. 4-5, 1889.*

The admission to all sessions of this Convention will be free, and the ladies are cordially and especially invited. An invitation is especially extended to all health officers and sanitarians to be present and take part in the discussions.



*First Session—Wednesday, December 4, at 8 p. m.*

1. Convention called to order by the President.
2. Music.
3. Invocation.—By Rev. R. H. Van Pelt.
4. Address of Welcome.—By Hon. B. W. Woodward, of Lawrence.
5. Response.—By Gov. Lyman U. Humphrey, of Topeka.
6. Statement of the object of the Convention.—By G. H. T. Johnson, M. D., of Atchison, President of the State Board of Health.
7. Sewerage and Drainage of Lawrence.—By Prof. F. O. Marvin, of Lawrence.
8. Know Thyself, or Self-Knowledge.—By J. W. Redden, M. D., of Topeka, Secretary of State Board of Health.
9. What our Schools may do for Sanitary Science.—By Miss Sarah Brown, of Lawrence.
10. Address.—By Hon. John Hutchings, of Lawrence.
11. Music.

*Second Session—Thursday, December 5, at 9 a. m.*

1. Utility of Boards of Health.—By J. Milton Welch, M. D., of Wichita, member of the State Board of Health.
2. Well-Water in Lawrence.—By Prof. E. H. S. Bailey and Prof. L. I. Blake, of Lawrence.
3. Duties of the Citizens to the State in Maintaining Public Health.—By D. C. Jones, M. D., of Topeka, member of the State Board of Health.
4. Sanitary Matters in Douglas County.—By N. Simmons, M. D., of Lawrence, County Health Officer.
5. The Water Supply of Kansas; or, Water as a Factor in Health and Disease.—By J. W. Jenney, M. D., of Salina, member of the State Board of Health.
6. The Athletic Life of Universities.—By Prof. Max Winckler, of Lawrence.

*Third Session—Thursday, December 5, at 2:30 p. m.*

1. Our Homes: the Choice of a Site with Reference to Sanitary Conditions.—By R. C. Musgrave, M. D., of Grenola, member of the State Board of Health.
2. Adulteration of Food and Medicine.—By Prof. L. E. Sayre, of Lawrence.
3. Sanitary Instruction in our Schools and Colleges.—By W. L. Schenck, M. D., of Osage City, member of the State Board of Health.
4. Physical Culture in its Relation to Health.—By W. S. Bunn, M. D., of Lawrence.
5. Money Value of a Low Death-Rate.—By Prof. F. W. Blackmar, of Lawrence.
6. Interest of the State in the Prevention of Disease.—By John A. Henning, M. D., County Health Officer.

*Fourth Session—Thursday, December 5, at 8 p. m.*

1. Music.
2. Public Health *versus* Public Wealth.—By R. A. Williams, M. D., of Olathe, member of the State Board of Health.
3. Polluted Water, (illustrated.)—By Prof. F. H. Snow, of Lawrence.
4. The Sanitary Conditions and Necessities of School Life.—By Frank Swallow, M. D., of Valley Falls, member of the State Board of Health.
5. The Peremptory Phase of Municipal Administration.\*—By Prof. J. H. Canfield, of Lawrence.
6. Personal Duty of the Citizen Touching the Prevention and Spreading of Com-

\* Paper prepared by members of Junior class in Local Government.



municable Diseases: from the Standpoint of the Mother.—By Mrs. A. L. Diggs, of Lawrence.

7. Endemic, Epidemic and Contagious Diseases, and their Prevention.—By H. D. Hill, M. D., of Augusta, member of the State Board of Health.

8. Reports of Committees, Resolutions, and Miscellaneous Business.

9. Remarks by the officers and visitors of the Convention.

10. Music.

Opportunity will be given for anyone to discuss the papers presented to the Convention.

Authors of papers are requested to limit them to twenty minutes. The speakers who lead the discussions are to be allowed ten minutes each; all others, five minutes. All papers, after being presented to the Convention, are to be handed to the Secretary for publication.

The Hotel Eldridge will entertain delegates at \$2 per day.

It is hoped that the papers of the State will be well represented by their reporters.

The following brief synopses from the monthly and quarterly reports of county health officers are worthy of mention:

Cheyenne county reported 20 cases of dysentery, with no deaths; and that the sanitary condition of the public buildings and the county in general was very good.

Stevens county reported 4 cases of dysentery, 3 of cholera infantum, and 2 of typhoid fever, and that the public buildings are built with the latest improvements with regard to ventilation—high ceilings, etc.—with good sanitary surroundings. The county is a very healthy locality, so much so that physicians have little or no practice. No epidemic diseases during the quarter, and very few cases of ordinary disease, and no fatal cases. The only fatal case reported was from apoplexy and paralysis.

Jewell county reports 15 cases of measles; 8 cases of scarlet fever; 3 cases of cerebro-spinal meningitis; 6 cases of diphtheria, with one death; 18 cases of whooping-cough; 4 cases of erysipelas; 16 cases of typhoid fever, with 3 deaths; 2 cases of puerperal fever, with one death; 53 cases of diarrheal diseases, with 6 deaths; 12 cases of consumption, with 3 deaths; and 25 cases of acute lung diseases—making a total of 160 cases reported, and 14 deaths, 9 of the deaths being of those under 5 years of age. There were also reported 20 births and 16 marriages.

Anderson county reports as follows: Number of deaths 14, number of burial cases sold 30, number of marriages 23, number of births 65. In the births, there was one case of triplets; the children are all living and doing well. This will make the number of births 68 for the quarter. The general health of the county is fair, though there is a considerable amount of typhoid fever prevailing, and among them a few deaths. The Health Officer adds:

“We had in this city, during the last quarter, eight cases of scarlatina anginosa, with two deaths, but being sporadic in form, it has entirely abated. We have now diphtheria throughout the county; ten cases reported, with two deaths. I have carefully examined its nature, and report that it is mild in form, and in a sporadic and not an epidemic form. However, I would say it is a dangerous disease, and requires prompt attention; it is considered contagious by medical authority. Quite a number of nuisances have been abated in different parts of the county—a very material benefit to the people. Having visited the poor-farm frequently, would say

that the sanitary condition is good, the house is kept clean, and the inmates faring well. The county jail is also in a good sanitary condition. We are glad to know that the general health throughout the county is fair, and would say that if each family would see that their houses and premises were kept in good sanitary condition, there would be less sickness. Cleanliness is the next thing to godliness, and it does prevent sickness and suffering."

The following abstract from a report for the present quarter of Dr. Rouze, Health Officer, of McPherson county, is of special interest:

"The physicians of the county have been making returns, but not with the degree of regularity that would be desirable. So far my methods of securing coöperation have been mild and wholly persuasive; I have thought, and still think, that the better way. As I stated to you in a former letter, when this work came into my hands, there was comparatively little being done, and a constant dropping-off. There yet remains quite a sentiment against the work in the minds of many of the physicians, and I am quite unable to see why it should be so, unless it be the fact that it requires a little care and work and a trifling expense on their part. I have abiding faith in the work, and still hope and expect to be able to bring our county to the very front.

"The general health of our county has been remarkably good; a few cases of typhoid and malarial fever, with a slight run of measles, and an occasional mild case of scarlet fever. Just now I hear of diphtheria in the south part of the county. In fact, we have had but little sickness, and that usually of a mild type, since our recovery from the small-pox one year ago last spring. I attribute it largely to the excellent sanitary conditions that obtained at that time."

The following communication was received from the County Health Officer of Montgomery county, in reference to quarantining small-pox:

ELK CITY, KAS., September 14, 1889.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka*—DEAR DOCTOR: Our county attorney says we have no authority for enforcing quarantine in the State of Kansas. Is it a fact? And if not, please tell me how I can proceed, if necessary. At present there are no new cases of small-pox, and the afflicted family seem inclined to observe the quarantine.

It worries me, Doctor, to try to act in an official capacity without authority. If a test case of quarantine has been made, please give reference, that I may look the matter up. I hope I am not troubling you too much in this matter.

Yours truly,

J. T. DAVIS, M.D., *County Health Officer.*

To which I replied as follows:

TOPEKA, KAS., September 16, 1889.

*J. T. Davis, M.D., Elk City*—DEAR DOCTOR: Your late favor received. We have never yet had a test case made of the power and authority of the State and local health boards to enforce quarantine in cases of contagious and pestilential diseases, such as small-pox, diphtheria, and scarlet fever. Wherever necessary, quarantine has been effectually enforced by order either of the county commissioners or the city health boards, and never been questioned by the afflicted or quarantined families. The law creating State and local boards of health is very defective; yet we have acted upon the belief that the authority contained therein, coupled with our general statutes, is sufficient for our health boards to order and enforce quarantine for the protection of the people, the prevention of the contagious and pestilential diseases, and the speedy control and stamping out of the contagion they engender.

I am pleased to learn that no new cases of small-pox have developed in your county, and that the outlook is encouraging for controlling the disease, as it was at the writing of your last letter. Should you have any trouble or serious question about enforcing your quarantine measures, write me, and I will obtain the official opinion of the Attorney General upon the subject.

Write me upon receipt of this, and let me know whether there have been any new developments since your last letter. I shall expect a special and full report from you similar to that of Dr. Bidwell's, as published on pages 62-65 of the Fourth Annual Report, as soon as the quarantine is raised, and all the cases discharged.

Yours truly, J. W. REDDEN, M.D., *Secretary.*

The following communication is from the County Health Officer of Washington county, in reference to the management of small-pox in that county:

WASHINGTON, KANSAS, Sept. 27, 1889.

*Dr. Redden*—DEAR SIR: I have some trouble in getting all the facts in the small-pox case, but will get them later. I quarantined the one case reported, and succeeded in arresting and confining it to that case alone. It has given entire satisfaction to all concerned, the public as well as the County Commissioners. I wrote a letter to one of the Commissioners, and he sent his written approval and commendation of my course.

Washington county will always have a health officer in the future. So much for fact and public sentiment; and the indorsement of the best citizens is with me. Later, I will give you a full report in detail.

Your friend, CHAS. WILLIAMSON, M. D., *County Health Officer.*

The following letter is from the County Health Officer of Pawnee county, and shows the interest he is taking in his official labors, relative to the control and suppression of diphtheria:

LARNED, KANSAS, Oct. 11, 1889.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: We are having an epidemic of diphtheria. I have endeavored to establish quarantine. It passed the Council, but is meeting with opposition; some of the medical men are opposing it. I distributed the literature you sent me. Sent a copy of pamphlets on diphtheria, scarlet fever and typhoid fever to all the physicians in the county, but it seems to require line upon line, etc. Will you please send me some more of the pamphlets on diphtheria for distribution.

Respectfully, J. MATHIOT CUMMINS, M. D., *County Health Officer.*

Dr. Cummins has written me subsequently that the question of the contagiousness of diphtheria, and the benefits to be derived from quarantining said diseases, were being freely and thoroughly discussed in the newspapers, and that he believed that great good would result from the discussion; so that in the future the people would be ready and anxious that quarantine should be enforced, and the disease suppressed. This is another instance of the benefits resulting from county health boards.

The following letter is from the County Health Officer of Linn county, about diphtheria in that county:

MOUND CITY, KANSAS, October 9, 1889.

*J. W. Redden, M. D.*—DEAR SIR: I have been in Colorado, and upon my return I learn that in Pleasanton there have been a good many cases of tonsilitis, with three

or four deaths. Last Friday a case of diphtheria occurred here in Mound City, and on Sunday morning death resulted. It was in the croupous form, in a girl of about 16 years. This morning a lady of 25 is down with the same disease. I presume the Pleasanton disease is the same. It is surely diphtheria.

IRA E. COE, M.D., *County Health Officer.*

The following letter is also in reference to diphtheria in Clay county.

CLAY CENTER, KANSAS, October, 1889.

J. W. REDDEN: This week two children died in one family, thirty-six hours apart, which were sent by rail to Missouri, the 16th. The attending physician, Dr. —, reported the cases as *ulcerative tonsilitis*, and acknowledged to Dr. — that there was membrane on their throats, and to Dr. — that they had diphtheria. Is there anything to be done in such a case? With respect,

S. E. REYNOLDS, M.D., *County Health Officer.*

To which I replied as follows:

TOPEKA, KAS., October 21, 1889.

*S. E. Reynolds, M.D., Clay Center*—DEAR DOCTOR: Your letter received. Am sorry to learn of the cases of diphtheria you have reported in your town. Hope you will keep as complete a history as you possibly can of all the cases that have or may occur; and when the disease is entirely stamped out, prepare and send me a special report containing all facts and items of interest bearing on the epidemic, that I may file it for publication in the Fifth Annual Report.

Several other localities in the State have been troubled with similar epidemics; but the health authorities have taken them in hand and successfully quarantined them, and thus speedily controlled them and stamped out the disease. Your City Council should pass a rigid ordinance, giving authority to the health officer to quarantine and isolate all contagious diseases, with a penalty attached for violation; then you will be armed and equipped for any cases that may occur, and can successfully manage them. If this has not already been done, you should see to it without delay. Will be pleased to hear from you at any time.

Yours truly,

J. W. REDDEN, *Secretary.*

More inquiries and requests for examinations of suspected impurity of drinking-water are being made than ever before; and this subject is causing more attention and receiving more consideration and investigation at the hands, not only of physicians, but of corporations, schools, officers and public institutions, than ever. People are becoming convinced that disease may be created and communicated by impure drinking-water, and consequently deaths may result. These startling facts are exerting an influence in the right direction, and we should stimulate these inquiries by every available means, knowing that nothing but good can result therefrom.

The following letter is from the Secretary of the Leavenworth City Board of Health:

LEAVENWORTH, KANSAS, October 3, 1889.

DEAR DOCTOR: Please send me fifteen or twenty copies of the pamphlet on diphtheria. I was called this morning to see a case in a family of the janitor of one of our public schools, who resides in the building, and has children attending school. I have ordered his rooms vacated, fumigated and disinfected, and the children removed from school at once, but I fear the disease may have been started, and I wish to be prepared.

Yours respectfully,

W. D. BIDWELL, M.D.,  
*Secretary City Board of Health.*



This letter was answered, and in a few weeks the following letter from Dr. Bidwell was received:

LEAVENWORTH, KANSAS, October 27, 1889.

*J. W. Redden, M. D.*—DEAR DOCTOR: I inclose report of one death in my practice, and that of twin births sent me by Dr. Glover. I have been unable to ascertain where the Sussman girl, who had diphtheria in the Morris school building, contracted the disease, although Dr. Lane informs me he has seen a number of cases of "putrid sore throat" in the Fifth ward, and Dr. Walter and I saw two cases of diphtheria in a colored family, they having recently buried another child with "sore throat," for which no medical attendant was called. Moreover, there seem to have been several cases of diphtheria in that vicinity which did not come to our notice.

The Sussmans were removed from the school building and the rooms thoroughly disinfected, and so far no other case of diphtheria has been heard of from that source, except a sister of the first patient. These two cases are now convalescent. The existence of unreported cases of such a malignant disease is accounted for on the ground that our physicians are not in the habit of so doing; public sentiment does not compel it, and we have no ordinance applying that can be enforced, with our present police-court machinery.

Yours respectfully,

W. D. BIDWELL, M. D., *Secretary.*

In a short time, Dr. Bidwell sent me the following interesting report:

#### DIPHTHERIA IN LEAVENWORTH.

By W. D. Bidwell, M. D., of Leavenworth, Secretary of City Board of Health.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: Your letter of October 29 was duly received. In reply, I would state that it is not an easy matter to give a full and accurate account of the origin and course of diphtheria here, for these reasons: in some cases, the people do not consider the disease dangerous, and fail to call in a physician, and more or less cases may develop from these; mistakes in diagnosis will occur, and cases go unnoticed. By inquiring among the families where diphtheria has been proven to have existed, I found one family in which the diagnosis of putrid sore throat was given; no precautions were taken, and children visited the house and spread the disease around. A very similar result followed from a case diagnosed as membranous sore throat. Only one case has been reported to the Board of Health as diphtheria, and that was the Sussman child mentioned in a previous letter.

Bertha Sussman, 6 years old, daughter of the janitor, lived in the basement of the Morris school. September 30th she was taken sick with high fever, etc. For some time previous the child had been at home within the school-yard, but of course mingled freely with the school children. No history of any previous or subsequent sickness among her playmates can be obtained, and the parents are of opinion that the disease was the result of foul air from the closets, etc. As I wrote you, the child was removed as soon as the diagnosis of diphtheria was made, and a day or two later the three-year-old brother took the disease. Both were very sick, but have made perfect recoveries, and no other cases have taken origin from these.

Another series of cases occurred among the pupils of the North Leavenworth colored school, and were discovered accidentally by Dr. Walter. September 24th Montia Jones, colored, aged 11 years, came home from school with headache, fever, sore throat, etc. She was sick two weeks, and had a severe attack, both nose and throat being affected, and more or less cough remaining afterward. Inquiring as to where she had been for several days previous to the attack, I was told that she had been to see the Morton child. This was a child which was taken sick Monday, Sep-



tember 16th. The doctor said it had membranous sore throat, and neighbors were allowed to come in freely, which they did. The child was reported to be "consumptive," and died September 21st.

Willie Jones, 7 years old, brother of Montia, was taken down with fever and sore throat September 29th; was sick eleven days, and died. No medical attendant. Willie and Montia Jones were living with their adopted mother, Mrs. Montague. October 8th Eddie Montague, 4 years old, was taken down, and was sick eight or nine days. October 8th Maggie Jones, 9 years old, was taken down; was sick the same length of time, and is still suffering from paralysis of the muscles of phonation.

Mrs. Sarah Montague, the mother, was taken down October 16th; was in bed three days, and is but just getting over the disease. The family had no medical attendant, but as soon as the disease was reported to Dr. Walter he gave them instructions relative to quarantine and disinfection.

These people say that there have been many cases in that part of the city, which the doctors called putrid sore throat, and it is not unlikely that there are other cases of diphtheria which have not been apprehended as such.

Since commencing this letter, I have seen Drs. Lane, Hamilton and Moates, who were reported to have had cases of diphtheria in their practice. Dr. Hamilton stated that he had had no cases of diphtheria, but had had some very severe cases of sore throat. These cases were in the same general neighborhood as the cases previously described. Dr. Moates's reply I inclose as I received it. Dr. Lane stated that he had recently had three cases, all comparatively mild, but still clearly marked with the diphtheritic membrane. They were in different parts of the city, and in his opinion were sporadic in character. One of them was so mild that she only remained away from the store a few days. I did not mention these cases to you before, as they were not reported to me, and it was only by looking up the physicians that I ascertained what I have here given you. I have inquired several times lately as to the existence of diphtheria in North Leavenworth, but find no other cases than these, and in my opinion, we are at present free from the disease. Some physicians do not consider diphtheria sufficiently dangerous to report cases of it, and I consider it our good luck that no more cases have appeared here.

Hope this report will meet your approbation.

The following letter is the one referred to in Dr. Bidwell's report:

DEAR DOCTOR: In reply to yours of Oct. 31, will state that I have had one case which I diagnosed and treated as diphtheria. Case occurred about the 20th of September, and with the following history:

A colored boy, about 12 years of age, had been sleeping on the street, and eating wherever he could, till a family took pity on him and took him into their home. A few days (four or five) after his admission, he complained of a sore throat, and said he felt chilly. This was on Monday. On Wednesday of the same week I was called to see him. On examination found his pulse 120, and very weak; temperature, 104 degrees; great prostration; complained of dizziness and nausea on using the sitting posture; vomited frequently; fauces covered by a thick greenish-yellow membrane; opening of nostrils incrustated; free discharge of thick, purulent matter; breath was very offensive. There was also purulent collection at inner angle of each eye; eyes were filling. Put him upon usual remedies for diphtheria; cautioned family against admitting others. Saw him again that week; no improvement; and also on Thursday and Friday; found him sinking rapidly at each visit. He died Friday evening, apparently from toxæmia. Attributed the origin of his trouble to the exposure to which he had subjected himself during the two weeks previous to his illness. This is the only case I have had. Yours truly,

C. M. MOATES, M. D.

Under the interstate notification resolution, passed by the National Conference of State Boards of Health, the following information has been received: On September 24th the Secretary of the Tennessee State Board of Health reported to me 16 cases of small-pox in a sparsely-settled region, ten miles north of Lexington, in the county of Henderson in that State. Its origin was unknown; and that isolation, vaccination and disinfection were enforced, and its spread was not apprehended.

November 18th the Secretary of the Illinois State Board of Health reported to me that one case of small-pox had been reported at Rover's Park, in Cook county, Illinois; and that every precaution had been taken by the local authorities to prevent its spreading.

On November 25th the Secretary of the Minnesota State Board of Health reported to me a case of small-pox in Hennepin county, State of Minnesota, being that of a traveling-man, who arrived from Chicago the last of October. He was removed to the small-pox hospital, and isolated.

I call attention to the report of the following death, reported by an undertaker in the city of Atchison, and sent directly to me:

STATE OF KANSAS, BURIAL-CASE PERMIT.—NO. 63.

Burial case sold for Mrs. Scharlott Reed. Date of death, April 3, 1889. Age, 98 years. Place of death, city of Atchison. Cause of death, old age. Name and residence of medical attendant, none.

To J. W. Redden, M. D., Secretary State Board of Health.

Atchison, Kansas, April 3, 1889.

J. A. HAROUFF, Undertaker.

The latter part of October, Dr. Jenney, County Health Officer of Saline county, wrote that two members of a family had died within a few hours of each other, and that five more had been confined to their beds for a few days; that drinking-water was suspected as the cause. He prepared a jug of water according to our printed directions, and sent it to me for chemical and microscopical examination. I had Dr. Alexander, the chemist of the Board make the examination. You will see from the report that the water was very impure. The following is Dr. Alexander's letter accompanying the report of the examination of the water:

TOPEKA, KANSAS, October 28, 1889.

Dr. J. W. Redden, Secretary Kansas State Board of Health, Topeka, Kansas—DEAR DOCTOR: Inclosed you will please find report of analysis of sample of water received from Salina, Kansas, about October 21, 1889. It is a very impure water, as you will see by the report. Very truly yours,

REID ALEXANDER, M. D.

The following is the analysis and report:

TOPEKA, KAS., October 28, 1889.

Analysis of samples of water received from Salina, Kas., about October 21, 1889:

	Grains per U. S. gallon.
Organic matter .....	3.480
Silica, oxide of iron, and alumina.....	.850
Bicarbonates of lime and magnesia.....	22.040
Bicarbonates and sulphates of sodium and potassium.....	3.567
Chloride of sodium.....	1.383
Total.....	31.320
Chlorine (combined).....	.835

	<i>Parts per million.</i>
Free ammonia.....	.016
Albuminoid ammonia.....	.240
Microscopic examination: Infusoria.	

This water is unwholesome, on account of the excessive amount of organic matter and albuminoid ammonia.

REID ALEXANDER,

*Chemist and Microscopist for Kansas State Board of Health.*

We have every reason to believe that the Fourth Annual State Sanitary Convention, held under the auspices of this Board, which begins its sessions this evening, will be of unusual interest, importance, and benefit. The people of Lawrence and the faculty and students of the University have shown a deep interest in its success, and have manifested a willingness to do anything in their power to contribute to its usefulness. In conclusion, let us cherish the assurance that every paper presented will contain such seed thoughts as will make a valuable and permanent impression upon each hearer, and thereby convey to all parts of our Commonwealth the knowledge thus obtained, that will be the means of educating the people to appreciate the value of sanitary science, and lead them to do all in their power to prevent disease, protect health, and render homes neat and happy.

Respectfully submitted.

J. W. REDDEN, M. D., *Secretary.*

December 4, 1889.

## REPORTS OF DELEGATES.

INTERNATIONAL CONGRESS OF HYGIENE, AT PARIS, FRANCE,  
AUGUST, 1889.

*To the President and Members of the State Board of Health*—GENTLEMEN: As a delegate from your body, and representing Kansas, I attended the sessions of the International Congress of Hygiene, and take great pleasure in presenting to the Board a synopsis of the proceedings of this Congress.

During July and August there were many congresses sitting in Paris. I will mention those on Alcohol; on Poor Relief; on the Amelioration of the Condition of the Blind; on Zoölogy; and on Hygiene. The last named is undoubtedly the most important of all these gatherings.

The last Congress was held two years ago, in Vienna, and the next will be held in London, in 1891.

The Congress met at 9 A.M. and 2 P.M. each day. The Congress divided into eight sections, and treated the following subjects:

Section 1: The hygiene of childhood, milk-supply, over-work in schools, etc. Section 2: Town and rural sanitation, construction of dwellings, ventilation, over-crowding, etc. Section 3: The germ theory applied to hygiene, infectious fevers, etc. Section 4: Industrial and professional hygiene, work of children in factories, unwholesome industries, etc. Section 5: International hygiene, and sanitary police. Section 6: Food adulteration, water-supply, and filtering processes. Section 7: Demography; sanitary statistics. Section 8: Cremation.

Its labors were inaugurated on August 4th, and there were at that time 662 members, of whom 134 were foreigners, and represented 28 different nationalities. Among the latter there were 10 English, 10 Italians, 14 Russians, 6 Roumanians, 8 Spaniards, 4 Swiss, and 22 delegates from the North and South American continents. Of the latter number, 4 were from the United States, as follows: Dr. Rauch, of Springfield, Ill.; Dr. Ward, of Boston, Mass.; Dr. Wilson, of Washington, D.C.; and Dr. Redden, of Topeka, Kas. Further, it is to be noted as a gratifying feature that the various municipalities, almost all the municipalities of the large towns of France, sent special delegates.

The opening ceremony took place in the large amphitheater of the Ecole de Médecine, which was gracefully decorated with drapery and flowers for the occasion. The Congress was held under the honorary presidency of the Minister of the Interior, and Dr. Brouardel occupied the chair. Dr. Chantemps, President of the Paris Municipal Council, and Sir Douglas Galton sat on either side of the chairman. The platform was crowded with the



representatives of different nationalities, and the large amphitheater was completely filled by the members of the Congress. A considerable number of ladies, many of them members of the Congress, also assisted. Dr. Brouardel, who was warmly greeted when he rose to speak, related how within thirteen years French hygienists had been received abroad five times—at Brussels, Turin, Geneva, The Hague, and Vienna. All had retained an ineffaceable souvenir of these great meetings, and he hoped that at our present Congress, and on the pacific field of hygienic study, fresh victories would be achieved. Alluding to the Faculty of Medicine, where the Congress met, he spoke on the immense changes that had been brought about. Here it was that medical men had struggled against barber-surgeons, and had sought to maintain the exclusiveness of their profession; yet here it was to-day that medical men welcomed engineers, chemists, architects, public administrators, and not only welcomed them, but were even anxious to consult them, and to follow their advice. Not only was this a mighty change, but it was precisely this that constituted their principal force. It was because hygiene united so many different professions that it had acquired so much strength and popularity. Hygiene had swept away the old ramparts that had kept various professions apart, and it would also help to unite different nationalities. The discussions, which were formerly restricted to the academies, had now invaded the Parliaments; and “the President of the French Republic, justly inspired by the interests of the democracy, of which he was the highest and most respected representative, had inscribed reform in the sanitary services among those reforms which must receive the first attention of the Legislature.” This announcement was received with loud applause.

Dr. Brouardel then proceeded to describe the difficulties of the Legislature when sanitary measures were proposed, as they almost invariably interfered with some vested interests. These interests soon organized resistance against the proposed reform. The expense and difficulty of reform was a certainty, while the danger to be avoided was often unrecognized or doubtful in the mind of the public. Then there was always some doctor or other who supported the old ideas, and thus strengthened the reaction. The Governments were often sorely perplexed. But such Congresses as the present armed the sanitary reformers with an expression of competent opinion which no administration could afford to discard. Dr. Brouardel then described some of the progress already achieved, and concluded by rendering homage to Dr. Napias and Dr. Martin, who had so ably organized the Congress, and the younger secretaries who had assisted. Paraphrasing the “Marseillaise,” he said: “Vous entrez la carrière lorsque vos aînés y sont encore.” Our generation has forged the arms; it is for the next generation to use them.

Sir Douglas Galton was then called upon to speak, and, in the name of Professor Corfield, Mr. Shirley Murphy, and the other English delegates, thanked the Congress for the reception given them, and for the honorable



position he (Sir Douglas Galton) occupied at the presidential table. He regretted deeply the absence of his eminent colleague, Sir Edwin Chadwick. Dr. Alfred Carpenter had once remarked that the influence of a sanitary inspector in preserving the health of a community depended on the degree of education of that community concerning the laws of hygiene. The mission of the English sanitary societies represented at this Congress was to spread the knowledge of hygiene at home and abroad. In Paris especially they were called upon to admire the progress made, and envy the intelligent manner in which the principles of hygiene were applied to daily life. The next Congress, it had been decided, would be held in London. They would do their best to show their foreign visitors how in England sanitary principles were practically applied. He hoped the French hygienists would attend in large numbers, and promised them a hearty welcome in London.

Senator Dr. Pacchiotti, on behalf of Italy, delivered an eloquent oration. He dwelt on the delight of the foreign delegates when invited to visit the country which had done so much for humanity, and which to-day had organized a universal exhibition that was the marvel of the world. He described how Italy, enlightened by the example of France, had created at the Ministry of the Interior a service of hygiene. This consisted of a director of hygiene, a medical man, and a committee of hygiene, organized under the Minister of the Interior, at Rome. These watch over the public health of the entire kingdom; while at each provincial prefecture there was a similar director of hygiene, aided by a committee, to watch over local interests, and to communicate with the central bureau at Rome. Dr. Pacchiotti then, in warm, glowing language, showed how Italy and France, as two sisters, had progressed hand in hand; how the works of M. Pasteur, of Emile Trelat and of Durand Claye had been appreciated in Italy, and how many Italian municipalities had imitated the example of Paris in creating a municipal laboratory for the prevention of the adulteration of food. In the future, as in the past, France and Italy would continue to struggle for freedom, for civilization, home, country, and humanity. This speech, which was ornamented by many flowers of rhetoric, was very enthusiastically applauded.

Senator Dr. Crocq, official delegate of the Belgian government, related what had been done in Belgium to organize the sanitary services, and maintained that it was the duty of every government, whatever its origin and form, to forward the interests of the people; and the first of these interests was the preservation of their health. For this purpose private interest, if necessary, must be sacrificed. A healthy people cost less and produce more. The question was an international one; for with the modern and rapid means of communication and exchange, one nation was sure to suffer from the neglect of sanitary matters by a neighboring nation. He therefore congratulated the Congress on its international character, and on

having met in France, the land of freedom, and in Paris, the capital of progress.

Dr. W. Dextererv, delegate of the Russian Society of Public Hygiene, briefly but warmly expressed the sympathy of Russian sanitary reformers with the French nation and the efforts of French hygienists. He was greeted with applause of a very special and marked character.

Dr. Felix, of Bucharest, rendered homage to the great sanitary reformers whom he had met in Paris at the Congress of 1878, and who were now dead; mentioning the names of Bouchardat, Gubler, Fauvel, Durand-Claye, Lionville, Paul, Bert, Wurtz, and Tardieu. He closed by a graceful compliment to the President of the Republic, M. Carnot, and the President of the Congress, Dr. Brouardel.

Señor M. Belmas, on behalf of the Spanish delegation, described the progress achieved in Spain, and the decrease of the death-rate in that country. He showed that a system of sanitary administration was being organized on the French model, and that those countries, late in reform, might ultimately become the healthiest, through the adoption of the most recent and perfected methods.

Dr. Chantemps insisted that a reduction in mortality always followed on the rigorous application of sanitary measures. As administrators, they had come to the Congress to learn. In the study of hygiene, a sentiment of generous solidarity united the representatives of every nation, and nowhere were words of international fraternity more welcome than at an international sanitary congress.

Dr. Napias, as Secretary of the Congress, read a lengthy report on its organization, containing the facts and statistics as to the Congress already given. He concluded by expressing his thanks for the active support the cause and the Congress had received at the hands of the press, and especially the representatives of foreign scientific journals.

Dr. Chantemps having felicitated the Congress on the presence of so many ladies, Dr. Roth urged that the Ladies' Sanitary Association was the first society of the sort that had been formed; and then the Congress adjourned to other apartments, where refreshments were served, and many friendly acquaintances renewed.

On Monday morning the various sections of the Congress met, and several resolutions were adopted. In the first section there was an important discussion on measures that should be taken in schools to prevent the spread of phthisis by the sputa of youths suffering from tuberculosis. Dr. Jablonski, a Russian delegate, would exclude every pupil who might be suspected of tuberculosis, but this proposal found no support whatsoever from the members of the Congress. Dr. Felix, of Bucharest, energetically urged that when there was abundant expectoration and no doubts entertained as to the nature of the malady, then the young person—for this would rarely

apply to little children—should be excluded from school. There could be no doubt that the sputa were a cause of infection, and therefore the education of one child had better be sacrificed instead of endangering the health of a whole school. Dr. C. Drysdale urged that the question was too wide in its bearings to justify the Congress in jumping at a conclusion. Personally, he had twenty years' experience of hospital treatment of phthisis, and had failed to remark that the nurses and other attendants contracted tuberculosis, and they were far more exposed to the contagion than school children, even if one or two among the latter were in an advanced stage of consumption. Other speakers protested against the danger of spreading unnecessary alarm, urging that cases where "suspicion" only existed should be subject to confidential communications between the school and the family doctor. Suggestions were also thrown out as to the necessity of providing spittoons, and preventing children soiling the floors of schools; but these were very generally considered impracticable. Finally, the section adopted the following resolution: "That children who undoubtedly are suffering from pulmonary tuberculosis may render the adoption of measures prescribed by the authorized medical attendant necessary for the preservation of the health of the school." Practically the question is left to the discretion of the school doctor, who may take measures, such as the exclusion of the pupil, when he thinks there is real risk of contagion.

In the afternoon an important discussion took place in Section 5 on the report presented by Dr. Proust, inspector-general of the sanitary services, on Sanitary Works in Seaport Towns. The report concluded: "(1) That it was the strict duty of governments and municipalities to render ports healthy; (2) that sanitary works for seaport towns were more necessary than for other towns; (3) that it was only when such sanitary works had been accomplished that any notable reduction in the death-rate and zymotic death-rate would take place; (4) that it was only when the ports presented a soil unsuitable for the penetration of morbid exotic germs that the last quarantine checks could be abolished." The discussion was limited to the first two clauses. No speaker made any allusion whatsoever to the question of quarantine. A very mild discussion was held as to whether the State, the municipality, or the chambers of commerce could best secure the application of the necessary sanitary measures; and then the vote was taken, and a favorable decision unanimously given. The chairman now rose to vacate the chair, but Mr. Adolphe Smith protested that, in common with many others, he had only voted in favor of the first two or three clauses of the resolution, and did not understand that the question of quarantine had yet come before the section. Most of the delegates had, however, already risen to leave. A confused conversation followed, and it was understood that the question would be re-opened on another occasion. The last clause of the resolution practically means that quarantines should be imposed everywhere; for what port is there in the world where it is possible to de-

clare that the soil is absolutely incapable of harboring the germ of an imported disease? This is evidently a subject which the Congress must more carefully discuss.

In the afternoon, Section 1 debated the able and interesting report of Dr. Landouzy and Dr. H. Napias on the Best Means of Protecting the Health of Children. Dr. Desmoulin of Ghent, said that whereas the mortality among rich children ranged from 10 to 20 per cent., that of the poor varied from 30 to 60 per cent. At Ghent, the children working in factories, from the age of eleven, showed terrible signs of physical degeneration. He urged that mothers should receive such help as would enable them to leave the mill at the period of childbirth. Many of the speakers denounced poverty as the principal cause of a high rate of mortality, but several delegates were afraid that by restricting the work of children, this poverty would be increased. Mr. Adolphe Smith, on the contrary, pointed out that it was precisely the competition of the work of the women and children that reduced the scale of wages. The British coal miner was better paid than the Belgian miner; but in Belgium, the women and children worked below-ground in the coal mine. The discussion was ultimately adjourned.

On Tuesday morning, the report of the French Government Commission on Unwholesome Dwellings was discussed at great length. The conclusions of M. Hudelo, the reporter, were combatted in a report drawn up by M. Jourdan. The principle at stake was whether the Commission on Unwholesome Dwellings could deal with the question, or whether, as proposed by M. Jourdan, special salaried inspectors should be appointed to inspect houses, and insist on sanitary improvements. The Commission of Insalubrious Dwellings had rendered great service. At Bordeaux, for instance, they had visited 1,800 houses in one year. Would a paid agent have the same moral influence? The commissions were composed of doctors, architects, and engineers, who received no remuneration, and whose opinion was therefore respected. Householders would be more likely to contest the decisions of a mere paid inspector. M. Jourdan insisted that the commissions which had done good work existed only in large towns, and could not be created in smaller districts. Dr. Pacchiotti remarked that as two sanitary laws were now before the French Parliament, it would be better to wait till their fate was decided. An American delegate related that paid sanitary inspectors in America did their work well; while Mr. Adolphe Smith also alluded to the work done by the sanitary inspectors in England acting under the medical officers of health. The difficulty in France was not to discover unsanitary houses, but to find a wholesome dwelling. According to the admirable charts shown at the exhibition by M. Masson, there were not 2,000 sanitary houses in Paris, but about 96,000 non-sanitary houses. A large, handsome room did not make a healthy house. Every house with soil pipes untrapped was unhealthy. It was first necessary to decide what



constituted a healthy house. This had been done in Brussels, but not in France.

Dr. Janssens, Chief of the Brussels Sanitary Bureau, then explained how, by applying the French law of 1789 and 1790, immense progress had been achieved, and the death-rate reduced from 30 to 22 per 1,000. Any complaint led to an inspection, and on report of inspectors the mayor ordered the necessary improvements. If these were not at once executed, the house was declared unfit for human habitation, emptied, and closed; the tenants then prosecuted the landlord, and claimed damages for disturbance; consequently, the landlords now always and promptly carried out the improvements ordered by the mayor at the suggestion of the sanitary inspectors and bureau.

The Congress ultimately unanimously decided that the French law of April 13, 1850, on unwholesome districts, should be revised. This revision was in the sense of rendering the appointment of commissions on insalubrious districts obligatory throughout France. Some delegates, preferring M. Jourdan's proposal, voted against this, but it was carried. Another resolution was adopted unanimously, raising the cubic space per inhabitant from fourteen to sixteen cubic metres; and a final resolution in favor of establishing sanitary bureaus in all towns was approved.

In the afternoon of Tuesday, Section 5 discussed the treatment and removal of domestic refuse—what in England is familiarly known as the dust-bin nuisance, but in France is called *la-boite a poubelle*. The discussion in the main was very French in character. Thus it was shown that in Paris, where there was little or no cinder, but, on the contrary, a larger quantity of vegetable refuse, the town refuse was worth from 3f. 50c. to 4f. the cubic metre. The reporter on the question, M. Dumesnil, insisted principally on the method for the removal of the refuse, and the resolution carried was to the effect that domestic or kitchen refuse should be placed in a metal box or case, which was to be kept clean and disinfected; "that it was desirable that the box or case destined to receive the refuse of the entire house should be placed at the disposal of all the tenants in the evening; should be kept in a part of the building where there was a plentiful supply of fresh air; should be provided with a lid easily removed, and kept in a cellar or other place where there is a ventilating-shaft." It will be seen that this latter part of the clause only applies to certain towns and houses. Another resolution, to the effect that all refuse should be put outside the dwellings before night and removed daily, was a more sensible proposal to make at an international congress, for it involved principles rather than details of execution, and was carried unanimously, and without discussion. In the course of the afternoon it was remarked that in England the contractors were paid to remove the refuse, while in France profits were made. Mr. Shirley Murphy pointed out that the practice in different districts varied, and that it was impossible, without knowing every detail, to compare the



one with the other; but where the cost of collection from the houses had to be borne by the contractor, he was paid in London large sums of money for this service. The principal new point raised was the question—often put, but never satisfactorily answered—whether house refuse could be partially dried and then packed under strong hydraulic or other pressure. Thus reduced in bulk, partially dried (that is, lessened in weight), it would cost much less to transport to distant agricultural districts, where a more ready market would be found.

On Wednesday, August 7th, the members of the Congress were up betimes, so as to catch the special train destined to take them to Rheims. After a three-hours journey we reached the historic town. A number of brakes, vans and carriages were waiting at the station, and we were conveyed some distance out of Rheims to view the sewage farm. This is quite a new institution, and only commenced to receive the sewage some four months ago. The town possesses 150 hectares,\* but can dispose, for irrigation purposes, of 500 hectares. This is amply sufficient, and when there is a storm, or when by some other cause there is more sewage than the soil under cultivation requires, the water may be thrown on some waste land. Thus the danger of flooding the ground is obviated, and underground drains are not required. There is a pumping station to send some of the water up to the higher grounds, which reach an altitude of twenty metres. Unfortunately, the chief utility of this sewage farm is to prevent the contamination of the river. It does not in any way solve the drainage problem. Rheims still drains into cess-pools; the town has not water enough for water-closets, but when the water supply has been increased, the existence of this sewage farm will enable the town to drain direct into its sewers. After duly investigating all these facts, the Congress was entertained at lunch at the Chateau des Maretz, which belongs to the company that has undertaken the management of the sewage farm. The lunch was served in a magnificent avenue of trees. Of course there were some excellent speeches, notably by the director of the company, the Prefect of Police, the Mayor of Rheims, Dr. Napias on behalf of the French, and Mr. Adolphe Smith, who was especially requested to return thanks by the Swiss, Turkish, Russian, American, and English delegations. Madame A. Tkatchef, doctor in medicine, spoke for the ladies, and the utmost enthusiasm prevailed. The Congress then visited the cathedral, the Pommery champagne cellars, and were again entertained, this time by the municipality of Rheims, at a second lunch, given in the Town Hall. Here more speeches were delivered. Those who participated in this pleasant journey will recognize that the study of serious subjects does not interfere with the spirit of mirth and the sense of enjoyment.

On the following day, Thursday, the Congress set to work again in ear-

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\*A hectare is  $2\frac{4}{100}$  acres.

nest. In Section 3 M. Delvaille (Bayonne) urged that the medical inspection of schools, as prescribed by the law of 1886, should be more rigorously applied, and that medical officers should be appointed for this purpose. Dr. Sevestre, of the Paris pauper children's hospital, urged that it was in its earliest manifestation that measles was most contagious; and that children suspected of this complaint should be kept away, but that the convalescents might be allowed to return earlier than was at present the custom. Dr. Lavet (Bordeaux) related that, by exceptional severity towards the "suspect," they had avoided the necessity of closing schools; while Dr. Rochard insisted that the school teachers must be instructed in these matters. It was no use relying exclusively on the medical profession, for there were 28,000 communes in France which had no doctor. With regard to short-sightedness in schools, Dr. Motais (Angers) gave the results of investigation on 6,700 children. He found that short-sightedness was much more frequent in Germany than in France, but that it was growing to an alarming extent in France. He was anxious to see the course of studies varied, and children prevented from looking for too long a period at some near object.

In Section 5 Dr. Almeras (Mentone) read a paper on the contagion of consumption, in which he complained that delicate persons were afraid to visit winter resorts for fear of contracting phthisis. He therefore asked that hotel-keepers should take rigorous measures to disinfect rooms which had been occupied by consumptive patients. At the present time hotel-keepers generally charged £12 in case of death, under the pretext that the room had to be purified; but it was rarely, if ever, properly done. He proposed that the ceiling, walls, etc., should be submitted to a pulverization with a sublimated solution containing 2 parts of mercury per 1,000 of water, and 12 in 1,000 of tartaric acid. When this was dry, then the same place should be similarly sprayed with a one-per-cent. solution of carbonate of soda. This would convert the sublimate into soluble salts. This service of disinfection should be managed in winter health resorts by representatives of public authority, and hotel-keepers should receive written certificates from the municipalities that the work has been properly done. If this certificate should not be produced, strangers should refuse to hire the room or apartment.

Dr. de Valcour (Cannes) described three cases of scarlet fever following upon each other in the same room of a hotel where disinfection had not been practiced, and called upon Mr. Adolphe Smith to describe the English law on the subject. After the Congress had heard this explanation, Senator Dr. Pacchiotti related how a lady belonging to an aristocratic and influential family was taken away by the police from an Italian hotel (though she was in a very grave condition, and subsequently died), so that she should not infect the hotel with the small-pox she had contracted. The Italian law had armed medical men with sufficient power to see that proper precautions were taken. Dr. Felix (Bucharest), on the contrary, was loth to

ask too much from the state, and more anxious to so educate the people as to make them spontaneously and willingly take the precautions judged necessary. At Bucharest they had a disinfecting stove, and he was surprised to note how many persons came of their own accord and asked to use it. The declaration of infectious diseases was not obligatory in Roumania, but the police had ample power over the hotels. A Swiss delegate explained that only in some cantons was a notification of disease obligatory. Disinfection in towns was easy, but difficult in country districts, though there were epidemics in villages as well as towns. The section concluded that in each sanitary district a disinfecting service should be organized, and that the carting of bedding in the streets or squares of towns should be prevented.

Dr. Devillers brought forward a motion against fairs held in large towns. He related that in 1886, in the Belleville districts of Paris, small-pox broke out immediately after the fair, and in houses that faced the street where it was held. The present year it had been noted that there were six times as many cases of scarlet fever near one of these fairs as in other parts of Paris. In some provincial towns similar observations had been made. Apart from epidemic diseases, accidents sometimes occurred, and the noise was most distressing to many persons, especially to invalids. Some speakers objected, on the other hand, that the special tax levied on these booths provided money for the elementary schools; nevertheless, the section voted that such fairs should be held in open spaces outside large towns, and not in the streets.

Dr. Martin then read a learned dissertation on the condition of French sanitary legislation. He lamented that there was no law against infection. Theoretically the mayors had considerable powers, but as they could not act without funds, and could not obtain funds without a vote from the municipal councils, their powers were rather nominal than real, especially in cases of emergency. Nor had the mayors received any support from the higher courts of appeal. For instance, during the cholera epidemic of 1885, the Mayor of Caen had suppressed a cess-pool which caused a great nuisance and contaminated the subsoil. On appeal, the higher court, while recognizing that it might have been necessary to suppress the cess-pool, decided that the mayor had no right to prescribe how this should be done, but should have left the work to the discretion of the owner. Practically, if the sanitary authority had no right of supervision, it would mean that the work would not be done, or would be done badly. Again, at Toulon, during the cholera, a man refused to whitewash his room; the municipal authorities thereupon sent their agents to do the work. The owner appealed to the local police court, and this court approved the action of the municipality; but when taken to the Court of Cassation, this tribunal refused to confirm the decision of the Toulon police magistrate. Municipalities, after such judgments, are afraid to act. The French penal code, it is true, gives

the right to sue for damages, but to apply this in cases of contagion would be so unusual that no court would grant a verdict. Yet there are laws in France that are very severe, especially against foreign epidemics, such as cholera, plague, yellow fever, and in some cases penalties of one year's imprisonment and even a sentence of death can be applied; but the utter lack of national feeling renders it impossible to apply the legislation that does exist. The French sanitary law has been justly described as the "freedom of suicide." But no one had a right to create such infection in his own house, as it was likely to travel to the houses of others. It was not always the landlord who was to blame. Often a tenant would hire a stable or coach-house and convert it into a dwelling. The text of the law was extremely vague. What constituted an unwholesome dwelling should be clearly defined, and not left to the discretion of judges, who very often were absolutely ignorant as to the rules of health. Many courts, by their verdict, had set forth that they did not consider a supply of water in a house a necessity. A high court had condemned a local by-law ordering that houses should be supplied with water, as an attack against individual liberty. The best method of action and of punishment is for the sanitary authority itself to effect the required improvements, and charge the owner with the cost. Only, this must be done promptly. As matters now stood, legal decisions sometimes were obtained months after the nuisance had ceased to exist.

The discussion on this important subject was resumed in the afternoon sitting, when the difficulty of uniting the commissions of hygiene and similar bodies composed of men technically qualified to deal with such questions, but possessing at present only the right to give advice and no executive powers whatsoever, with the mayor, the prefect, or other authorities who could act, was very fully debated. The fact also that the mayor had to consider his electors, and if it was a fashionable resort he had to be very careful not to spread alarm; this was an obstacle to the stringent application of prophylactic measures. Two bills had been before Parliament to create a sanitary law and sanitary authority. The project presented by M. Siegfried was countersigned by no less than fifty deputies belonging to all parties, and yet it had fallen through. Such were the purely political pre-occupations of the National Assembly. Dr. Treille (Deputy of Constantine in the French Parliament) remarked that as the sanitary services had been transferred from the Ministry of Commerce to the Ministry of the Interior, and were in the hands of a man on whom sanitary reformers might rely, we could look forward to considerable improvement. Parliament would not resist a project if its necessity was clearly demonstrated, but he would suggest that the bill had better be first introduced in the Senate. Dr. Martin thought it was urgently necessary to alter the law of April 14, 1850, which had rendered the law of 1789 inoperative. The Belgians, it had been seen, had availed themselves of the law of 1789 with the most



admirable results so far as Brussels was concerned. Here 12,015 lives had been saved in fifteen years. Taking the one year, 1886, there were 628 deaths less than the average. Estimating every life at the modest sum of 1,000 francs, this represented a sum of 628,000 francs, and, as the Sanitary Bureau which had accomplished this result only cost 48,000 francs for the year, this was equal to an investment bearing an annual interest of 1,400 per cent. On hearing these details, the section burst into loud applause, and Dr. Janssens, Chief of the Brussels Sanitary Bureau, had to rise over and over again to bow his acknowledgments. After a few more observations from different speakers, the section adjourned.

On the 8th, the English delegates gathered in Section 5, in the hope that the question of quarantine would be reopened. Dr. Proust, however, was absent, and as he was the author of the report on the subject, it was thought advisable to await his arrival. The section therefore proceeded to discuss the subject of vaccination. Dr. Villemin related that in the department of France where he lived vaccination was performed only once a year, and those who were not present on that occasion could not be vaccinated. A Mexican delegate spoke in favor of compulsory vaccination, and Dr. Treille lamented that, even in an intelligent center like Paris, the population displayed the greatest indifference on that subject. He described how at Fribourg, small-pox had reappeared since the abolition of compulsory vaccination in that town. An American delegate stated that from time to time he instituted a house-to-house visitation, so as to know if all the inhabitants had been vaccinated. Dr. Arnoult, military inspector, claimed that to the army belonged the honor of having given the example to the French nation of the advantages that accrue from vaccination and revaccination; but their difficulty was, to contend against the non-vaccinated civil population. In the Second Army Corps, some soldiers under his care contracted small-pox at the Amiens Hospital. To avoid resistance, he had sought to popularize vaccination from the calf. Dr. Proust, who had by this time arrived, said that the German army was only really exempt from small-pox when the civil population had been vaccinated and revaccinated. He preferred vaccination from the calf to the use of lymph from even the healthiest-looking children. Dr. Felix said that in Roumania, vaccination, but not revaccination, was obligatory. They had not succeeded, even with the aid of the law, in vaccinating everybody, till vaccination from the calf was introduced; then the popular resistance ceased. Dr. Janssen said that in Belgium, vaccination was not obligatory by law, but was insisted upon in every school, and in every public service and institution, and was so admirably organized that there were very few Belgians who were not properly vaccinated. The subject was then allowed to be dropped.

Mr. Adolphe Smith, on behalf of the English delegates, now rose to inquire whether the Inspector-General of the French Sanitary Services, Dr. Proust, understood that the section had not adopted the fourth clause of



the conclusions of the report on sanitary works in seaport towns. The first three clauses had been carried unanimously, but as nothing had been said about quarantine, Mr. Smith, in common with several others, imagined that the vote did not apply to the fourth clause. The English delegates, especially at this late hour, were not in the least desirous of opening up the question of quarantine, and if Dr. Proust would concur in the opinion that the fourth clause had not been put to the meeting, the subject need not be further discussed.

Dr. Proust, however, did not agree to this. He was under the impression, on the contrary, that the fourth clause had been adopted; but, if there were any objections to this clause, he was quite willing that the matter should be investigated. Dr. Vignard, formerly director of the sanitary service of the lower Danube, rose and fully indorsed what Mr. Adolphe Smith had said. He had also voted for the first three clauses, which alone had been discussed, and not for the fourth, to which he was absolutely opposed.

A conversation thereupon arose between Dr. Proust and Dr. Vignard, which continued till they were called to order, and each party asked to make a statement.

Dr. Vignard consequently delivered an energetic speech. The resolution stated "that it was only when the ports presented a soil unsuitable for the penetration of morbid exotic germs that the last quarantine checks could be abolished;" but what criteria were they to show that the soil could not harbor germs? A port was never quite purified. People talked of the "rendering healthy" (the *assainissement*) of England as if it was something similar to the washing of a plate—an operation which, when once performed, was evident to all eyes. But there were English delegates present who could testify that this was not the case. In spite of the great works accomplished in England, much remained to be done, and even in London there were many plague-spots. He complained that he did not know what was going on in the sanitary services of France, and required a large publicity and public control with regard to the quarantine observations imposed by the French port authorities. He had noted with pain and surprise a remark in Dr. Brouardel's opening speech, to the effect that the treason of one guardian of a lazaret had cost Spain in 1884-85 no less than 200,000 lives. What was this system which by the momentary neglect of one out of many thousand guardians could bring about the loss of 200,000 lives? He agreed with quarantine as defined by Fodere in 1815. It meant the rope. The difficulty was to prove its utility or its inutility; for if we pointed to failure in one country, others would point to success in other countries. History, however, was against quarantine; for in the fifteenth century it had been properly and vigorously applied. In those days it was said that for a quarantine three things were necessary—money, force, and the hangman. A quarantine enforced as in the past, by sentences of death, was logical; but as we were not prepared, and as it was absolutely impracticable to return to these

barbarous practices, it was illogical, vexatious, and useless to maintain the fiction of quarantine. It was not till the Government of England had officially proclaimed that quarantines were useless that real sanitary improvements were accomplished. The great fear entertained in England of cholera facilitated the execution of sanitary works. What was the use of asking municipalities to vote large sums for sanitary works if they were told at the same time that they would be protected by the imposition of quarantines which would cost them nothing?

Dr. Proust, in reply, protested that he had no desire to revive the old quarantine methods. They were willing to give every facility to companies whose ships were well managed. As for publishing the details of what was done, that would be very uninteresting reading, but whenever anything of interest happened it was at once communicated to the press. The term quarantine was subject to misinterpretation; the abolition of this word had been proposed at the Rome conference. We need only take precautions against the cholera, the plague, and the yellow fever. These diseases came from such a distance that precautions were possible. First, all consuls in the different distant ports could telegraph information; then, the journey took from fifteen to twenty days, which was in itself a period of observation; and finally, the greater part of the ships had to pass through the Suez canal, where timely information could be obtained, and, if necessary, the ships detained before they entered the Mediterranean. This detention was proposed at the Rome conference, and approved by the twenty-two or twenty-three nationalities officially represented. England and India alone voted against the proposal. If a ship had a disinfecting stove on board, a good doctor, and no dangerous case had recently occurred, then they would give free *pratique*; but if there had been cases of cholera on board two or three days previously, then the ship should be detained. Practically, he had found, on inquiry, that such detention would have the effect of stopping four or five English ships for four or five days each year. There was a great difference between this and the quarantines described and denounced by Dr. Vignard. Besides, England had herself just sent the ship *Neva* into quarantine for sixteen days at Southampton. (This assertion greatly surprised the English delegation, who had certainly not heard of the circumstance.) Dr. Proust went on to give further explanation, which tended to reduce the meaning of the word quarantine to method of observation and disinfection—very different from what is generally understood by the term.

Dr. Treile approved of quarantines, and maintained that they had saved Algeria from cholera in 1884.

Mr. Adolphe Smith rose to explain that the point at issue was the actual wording of the resolution. Dr. Proust might attenuate the meaning of the word quarantine in a very satisfactory manner, but this would have no effect whatever with the outside public. Hundreds of newspapers would publish the text of the resolution, but would not know, or would not have space to

mention, the explanations given in the section. The point was, not what Dr. Proust might mean, but what the resolution meant; and the resolution undoubtedly meant that quarantine might be imposed even in the most salubrious ports, for there was no port in the world which could be described as absolutely incapable of harboring imported germs of disease.

Dr. Proust and several French delegates protested that they did not interpret the resolution in such a literal sense; but Mr. Smith, supported by the English delegates, persisted that this was the view the outside public, unenlightened by the discussions of the section, would take of the matter, and that therefore he would be obliged to press the question to a division.

Dr. Proust now, however, offered to withdraw the word "quarantine," and put "restrictive measures" in its stead. This, when taken in connection with the general tone of the discussion, was considered satisfactory, and it leaves for future congresses to discuss what restrictive measures may be imposed as a substitute for the old-fashioned quarantines. An amicable compromise being thus effected, the section adjourned without a division.

On Friday morning the members of the International Congress of Hygiene went to the Exposition, and examined the sanitary apparatus displayed there.

In the afternoon, in Section 5, M. Maignen read a lengthy paper on Water Filtration. He suggested, as a test, that water should be mixed with a known microbe, and a guinea-pig or rabbit inoculated with the water. Another rabbit should be inoculated with the same water after filtration. If the former died and the other did not, this might be taken as a proof that the filter was good. Dr. Mace had made experiments with the germ of anthrax in this manner, and found it did not pass through the "filtre rapide." The filter was equally efficacious in preventing the passage of metallic poisons, copper, lead, etc., in solution. Some little discussion ensued, during which preference for the porcelain filter was expressed by some of the speakers, though it works much more slowly. M. Maignen was thanked for his interesting communication, and the president of the section concluded by saying that filters were always excellent at first—the difficulty was to discover how long they would last.

Dr. Girard (Rheims) opened a discussion on the Supervision of Meat, urging that diseased meat should be cremated; and this was the best means of preventing its being surreptitiously sold. He further urged that the rules for supervision should be the same in rural as in town districts. This proposal was adopted by the section.

After a few words about syrup of glucose, Dr. J. A. Martin's report on River Pollution was taken into consideration. There has been a great amount of legislation on this question in France. There were ordinances issued in August, 1669; in June, 1773; and July, 1782. All these had the force of the law, and all declared that refuse, filth, manure, etc., should not be thrown into rivers. These old laws were recently invoked (July 24th,

1875), by a ministerial decision. Then there is the law of October 10, 1810, on manufactories, etc. The law of April 15, 1859, inflicts a fine of 30 francs to 300 francs, and imprisonment of from one to three months, on those who throw into rivers chemicals that kill the fish. A ministerial circular, dated July 31, 1882, forbids pits or porous wells, by which subsoil waters can be polluted with the residue of factories. Nevertheless, all these enactments require to be codified, and, above all, more strictly applied. Consequently, Dr. Martin concluded that industrial residue of a dangerous nature should not be allowed to flow into a river or an underground watercourse. This can only be allowed when the residue has been so treated as to deprive it of all toxic, putrid, dangerous or any other sort of matter that can alter the natural quality of the river-water. The purification of industrial waters or residue must be rendered compulsory, and executed according to approved methods. The purification by irrigation is the most perfect means of treating the waste water from mills, etc., containing organic matter. This must sometimes be preceded by chemical and mechanical processes to render such waters fit for agricultural purposes.

These conclusions were adopted, but a very lengthy discussion ensued as to who should be responsible for the application of such a law. If a manufacturer refused to purify his residue, should the state do the work for him and charge him with the cost? If so, what method would the state apply? Perhaps some antiquated, expensive method—in a word, the state might blunder, and put the manufacturer to unnecessary expense. As it was, many manufacturers had actually made money in seeking to prevent water-pollution, for this had led to the discovery of advantageous methods of utilizing waste. M. L. Faucher, civil engineer, member of the Central Congress of Hygiene in the department of the Nord, related that river-pollution had produced typhoid epidemics in his district. Each manufacturer, however, denied that the waste was the cause, because they only partially polluted the rivers. It was as if one man had the pistol, another some powder, and the third a bullet, and each declared he could not possibly do any harm; yet it was only necessary for the three to come together to be able to kill some one. This is exactly what happened in the river with the waste from factories; and now that it had been stopped in his district, typhoid fever had been stamped out.

It was ultimately decided that the authorities ought to carry out the necessary works if the manufacturers persistently refused to do so themselves.

In Section 4, on Saturday morning, Madame Tkatcheff read a most interesting and carefully-prepared paper on The Condition of the Working Classes in Russia. Irrespective of Siberia and Poland, she said, there were about 932,000 operatives employed in the mills and factories of Russia. The way a considerable proportion of these workers were recruited had a great influence on public health. Many of them were agriculturists, who, being unable to earn enough to live, came to the industrial centers



and worked in factories from September to February. They had no homes in those industrial centers, but very often slept in the factory itself, in the midst of the machinery, or in a sort of dormitory provided for them just above the works, and separated from the works only by a rude wooden floor, through which all the bad odors passed. Here the workers lay down on wooden shelves. They slept in their clothes, and at best had a little sack-ing. The shelves were placed one above the other, so that sometimes there were only a hundred cubic feet per person. All the inspectors appointed by government to inquire into these questions had complained of the dirt, over-crowding, and the promiscuity—for men and women often slept in the same dormitory. The hours of work varied from twelve to fourteen, and the food was altogether insufficient. The clothing was also of the poorest description. It was rare that a man could afford to wear leather boots, but contented himself with wrapping his feet in paper and rags and thrusting them into woolen shoes. Shirts were considered a vain luxury, and but for the sheepskins, worn with the wool inside, the people would die of cold. This sort of life soon destroyed all sense of self-respect, and fearful immorality was the result. The migrations of villagers into towns for a short time each year had brought back syphilis to the villages, and there were some villages in Russia where every single inhabitant was syphilitic. In some departments ten per cent. of the recruits were syphilitic.

There was but one redeeming feature—the Russian, however poor, always insisted on having a bath. He would as soon go without his food as to go without his weekly bath. There were no statistics to show what was the mortality of the Russian working-class population, but the general mortality was sufficiently significant; it was 17 per 1,000 in Sweden, 24 per 1,000 in France, and 36.8 per 1,000 in Russia. Out of 1,000 deaths the proportion of infants under one year was 113 in Norway, 190 in England, 216 in France, and 313 in Russia. The mortality among adults was equally high in Russia, and taking the deaths occurring at ages varying from thirty to sixty years the comparison was at the figures 11 for Norway, 13 for France, and 19.4 for Russia. Up to the year 1882, children five years old worked in factories. These children were sometimes syphilitic, as well as the victims of alcoholism. There were no regulations to prevent the explosions of boilers, and nothing to hinder accidents with machinery. Women had to suckle their babies in the passages of the factories; and as for benefit societies or anything of that description, it would be a mockery to speak of saving, to people who are driven by starvation to put up with such fearful existence. In the match trade seventy-five per cent. of the workers were children, and they employed white phosphorus. Yet there were men and women in Russia well acquainted with the progress accomplished in Europe, and some attempt had been made to imitate the good example. In 1882 a law was enacted forbidding the employment of children under twelve years of age, and limiting their work up to the age of fifteen to eight hours—



that is, four hours, then an interval of three hours' schooling, and then four hours more work. The law also forbids the employment of children in thirty-six different and dangerous industries, and this is three more than is the rule in most European states. Another law, enacted in 1885, forbids night work for women and children in weaving- and spinning-mills, but this law is as yet only applied in three centers. There is also organized under the Ministry of Finance a system of factory inspection. Russia for this purpose is divided into fifty-nine industrial departments; and as each head inspector receives 5,000 roubles, and the sub-inspectors 3,000 roubles, it is anticipated that they will be able to render good service, and that it will not be easy to bribe them to neglect their duties. There is also a law to the effect that when there are more than a hundred persons employed in a factory, medical attendance should be provided; but it is physically impossible to apply this law, for there are only 18,000 doctors in the whole of Russia. Consequently many factories have no medical attendant, and the lack of proper care in sickness is another cause of the high rate of mortality.

Madame Tkatcheff's paper, of which this is but a brief and incomplete summary, produced a deep effect. After a few questions had been put, Mr. Adolphe Smith rose, and urged the section not to rest satisfied with congratulating Madame Tkatcheff. She had given them a graphic and appalling picture of widespread suffering and human degradation. It was no use holding congresses if they did not exercise their undoubted influence to put an end to such abominations. He would suggest that the Russian delegation might prepare a report on the effect of the recent Russian legislation, and on the actual condition of the working classes in the country. This report could be presented to the London congress, and followed by a resolution worded in the manner which the Russian delegates might think would have the best effect in Russia. Such a resolution put to the entire London congress, and adopted unanimously, as there was every reason to hope it would be, could not but have effect. There was no government so deaf as not to hear the voice of a congress representing the best elements of sanitary progress in modern civilization. In any case it was impossible to be still and make no effort to remedy a state of affairs which was a disgrace to our common humanity. The use of international congresses was precisely to bring international pressure to bear where there was a weak point in the armor with which Civilization clothed herself to war against disease and premature death. He therefore moved the following resolution:

"That this section invites the Russian delegates to submit to the International Congress of Hygiene, in London, in 1891, a report of the results of the new laws for the protection of labor, and a resolution for the amelioration of the material condition of the working-classes in Russia."

This speech and proposal were warmly cheered, and the resolution was unanimously carried.

Dr. Dargelos read a paper on a method for rendering felt-hat manufacto-

ries less unwholesome. M. Fisher brought forward some proposals for disinfecting night-soil on its passage to the sewers, and M. Maignen an invention for purifying sewer-water, and extracting therefrom the solid residue, the ammonia, etc. The section, on the strength of these two papers, was asked to vote a resolution regretting that the proposed credit of 200,000 francs for experiments in this direction had been struck out of the French budget. Mr. Smith objected, on the ground that the French budget did not concern an international congress, but only the principle at stake; and he thought we should all agree that all the governments, and not one single government, should be more liberal in such matters. The utilization of sewage was a problem that might necessitate expensive experiments, and the states of Europe and America should, by small subventions, encourage such experimental research. A resolution in this wider sense was thereupon unanimously adopted, and the section adjourned.

On Friday afternoon some sections met at 2 o'clock, but at 4 o'clock all the sections met together in the grand amphitheater for the final sitting.

Dr. Brouardel, as President of the Congress, explained that the sections had passed a number of resolutions; that the subjects to be discussed in each section had been fully announced beforehand, and therefore each member of the Congress had enjoyed the opportunity either of supporting or combatting any one of the proposals brought forward. Under these circumstances they might conclude that what the sections had done had been well done, and now he would ask the Congress to approve by vote, and if possible without discussion, the decisions of the sections. Dr. Martin then commenced to read upwards of fifty resolutions. Dr. Brouardel soon discovered that a large number of these resolutions dwelt exclusively with French questions, and therefore did not put them to the Congress, but referred them back to the French committee. Most of the other resolutions of a general character were confirmed by a show of hands, though now and then there were a few opposing votes, and often a great number of absentees. The fact was, that many of the subjects were entirely new to a large number of the members, who had not been able to attend more than one section at a time. Still, it was too late for discussion, and many things were allowed to pass which will require revision. Many of the resolutions thus confirmed have already been given in describing the work of the sections. To these I might add a resolution very warmly applauded, demanding that an address be forwarded to M. de Freycinet, Minister of War, congratulating him on his recent measures on sanitation in the army. Other resolutions demanded: A permanent inquiry into the cause of excessive infant mortality; a stricter control over midwives; the teaching of hygiene in school; the publication of methods of water analysis; the creation of bureaus of hygiene and municipal laboratories in all centers of population; new laws enabling municipalities to compel householders to adopt the town water-supply; the abolition

of all laws preventing cremation; the encouragement of cremation on battle-fields; the better inspection of pharmacies; etc.

The reading of these resolutions having taken up considerable time, the concluding ceremony had to be proceeded with very promptly, and Dr. Brouardel spoke for only a few moments. He announced that the next Congress would be held in London, during the first week of August, 1891. The work of organization had already commenced, and the subjects to be discussed would probably be known in about six months' time. He thanked his colleagues from abroad for the excellent support they had given the Congress, and hoped the harmony which had prevailed during the week would continue to reign amongst the nations represented.

Dr. Roth, on behalf of the foreign delegates, wished to thank the President and the organizing committee for all they had done.

Senator Dr. Pacchiotti, in an enthusiastic speech, reproved the President for qualifying him as a foreigner. "The President," he exclaimed, "salutes the foreigners, but there are none in France. We are all at home in France. Here we meet each other, we live close to each other, we learn to love each other; we talk on the same subjects, we pass the same resolutions; we are not foreigners—we are brothers."

Mr. Shirley Murphy, in the name of the English delegation, rose to thank the French organizers of the Congress for the admirable reception they had prepared. He hoped to demonstrate the gratitude felt by the care they would take in providing hospitable entertainment in London. The cause they had at heart merited the support of all civilized nations. He only regretted that London was not a beautiful city like Paris, and that London did not possess a Brouardel. Nevertheless, he cordially urged all present to accept the invitation and meet again in England, and therefore he did not say *adieu*, but *au revoir*.

Mr. Shirley Murphy was loudly cheered, and the Congress was declared closed amidst cries of "*a Londres!*"

Though the official work of the Congress was thus brought to an end, some two hundred members met again on the following Sunday morning, and, led by M. Bechmann, engineer-chief of Paris, visited the palatial sewers that run from the Place de la Madeleine to the Chatelet. In barges and in a sort of tramway they traveled through underground Paris. The sewers were illuminated by many lamps, and also by electricity. The barges were supplied with cushioned seats. The ladies came in elegant toilets, and, so that they should not soil their dresses, the steps down into the sewers were carpeted. As an engineering feat these "palatial sewers," as they have been so justly described, are certainly most remarkable, and well worth a visit. From the Chatelet, the members of the Congress were conveyed in comfortable brakes to the sewage farm of Gennevillier. At Clichy they stopped to see the pumping-machines, which lift a third of the sewage and send it

over the river in an iron pipe to Gennevillier, where it is used to irrigate 750 hectares of market gardens. The remainder will in course of time be sent to Archeres and to Mery. In the meanwhile, two-thirds of the Paris sewage still fall into the Seine at Asnieres, and the members of the Congress were able to witness how it fouls the waters of the river. They then went over the sewage farm, admired the vegetables, ate some of the fruit, and drank the beautiful clear water derived from the sewage of Paris. It contained, they were assured, a smaller number of microbes than the best spring water, the Vannes water, supplied to the town of Paris. The Congress now proceeded to enjoy the excellent lunch provided by the town of Paris, at a restaurant in the little village of Gennevillier. The toasts were preceded by speeches of a particularly earnest and hearty character.

Dr. Martin, as president, proposed that a crown composed of flowers from the sewage farm of Gennevillier should be deposited by the Congress on the grave of M. Alfred Durand-Claye, the author of the scheme of which they had admired the result. He recalled that when, in 1878, Durand-Claye had visited Gennevillier, he had been mobbed by the inhabitants: now he was the hero of the place.

M. Emile Trelat, who could scarcely control his emotion, drank to the memory of his old friend. Durand-Claye had been an eminent engineer; he had distinguished himself at college everywhere; but what made him really great was the whole-hearted manner with which he had given himself up to his work. Around them at Gennevillier every hod of earth, every flower, breathed his name. A man with two hearts—a heart in France and a heart in his native Italy—Pacchiotti, had proposed that a monument should be raised in honor of Durand-Claye. As a Frenchman, he could but blush that a Frenchman had not first made the suggestion; but, while blushing, he gladly followed the example set by his excellent Italian friend.

M. Deligny, Municipal Councillor, who had worked fifteen years with M. Durand-Claye, spoke a few affectionate words in his memory; and then the Mayor of Gennevillier, in the name of the inhabitants, desired to associate himself with the project, and promised a free grant of land for the monument.

M. Bechmann, M. Durand-Claye's successor, and Dr. Henriot, Mayor of Rheims, having spoken, there were loud cries for Dr. Bourneville, who in the National Assembly had carried the bill which legalized these irrigation works, and whose admirable report should be studied by all who are interested in the subject. Dr. Bourneville in his speech paid a handsome tribute to the various international congresses of hygiene. It was their debates, their decisions, which had strengthened his hands and enabled him to obtain the sanction of the French Assembly. M. Durand-Claye had collected a splendid library on sanitary questions, and proposed to leave it to the Museum of Hygiene which he hoped the municipality of Paris would soon be able to create, and he called upon M. Deligny to press the matter forward.



M. Bonkowsky Bey, chemist to His Majesty the Sultan, in a few well-turned sentences proposed that the names of the ten agriculturists who first consented to utilize the Paris sewage-water at Gennevillier should have their names engraved on the Durand-Claye monument.

Delegates from Mexico, Brazil and Egypt, having also expressed their sympathy, Mr. Adolphe Smith was again selected as spokesman on behalf of England and America. In the name of these nations he desired to participate in the centenary celebrations of 1789, a date to be ever associated with the spread of those principles of freedom which were the basis of true scientific research and knowledge. As representing the most liberal nations of the civilized world, he hoped America and England would always remain united with France in their forward march. He claimed for these countries the full right to participate in the honors to be rendered to the memory of Durand-Claye. He challenged the French right to monopolize this memory. Durand-Claye was a glorious example of the international character of sanitary science. He had never paused at a frontier line, but studied hygiene with equal assiduity in England, Holland, Belgium, even in Germany, availing himself of all the good ideas he could find in all countries. That library which he had so generously left to the town would be found to be an international library; and Paris was an international town, and hygienists of all countries meant to avail themselves of Durand-Claye's experience, and while inspiring themselves by his great works, claimed their right to contribute to the homage that would so justly be rendered to his memory.

This speech was enthusiastically received.

Dr. John H. Rauch, Secretary of the Illinois State Board of Health, confirmed briefly in English the sentiments expressed, and promised to raise a subscription for the monument in America. Several hundred francs were at once collected among the guests, who, though they had started at nine in the morning, did not get back to Paris till five in the afternoon. Still the Congress was not quite over, for the next evening a hundred members, principally the foreign delegates, were entertained at a brilliant reception given in their honor at the Ministry of the Interior, by Minister M. Constant.

Thus at last was the most animated and successful Congress terminated. I have given a very imperfect, incomplete account of the proceedings, but perhaps have said enough to show the interest and importance of this Congress. But for a full account of the Congress it is best to wait till the official report, which will constitute a large and handsome volume, is published. This will probably be done at an early date, and will be sent gratuitously to all members of the Congress. Those who were not members will probably be able to obtain the report by applying to the Secretary General of the Societe de Médecine Publique et Hygiene Professionnelle, 28 Rue Serpente, Paris.

In conclusion, I cherish the expectation that members of this Board may possess the inclination, time and means, and attend the next session of the International Congress of Hygiene, which will be held in London in August,



1891, and I am confident that they will be well repaid for the time and expense required, and will take pleasure in contributing from their stores of hygienic knowledge, information that will both interest and edify the members of that Congress.

Respectfully submitted.

J. W. REDDEX, M.D.,

*Delegate from the Kansas State Board of Health to the International Congress of Hygiene.*

TOPEKA, KANSAS, September 12, 1889.

#### AMERICAN PUBLIC HEALTH ASSOCIATION.

BY D. C. JONES, M.D., AND FRANK SWALLOW, M.D.,

*Delegates from the Kansas State Board of Health to the American Public Health Association.*

The seventeenth annual meeting of the American Public Health Association convened at the Brooklyn Institute, Brooklyn, N. Y., on Thursday, October 22, at 10 o'clock A.M., and continued four days.

The attendance was good, and the meeting a successful one. Physicians, clergymen, sanitarians, hygiene experts, and others of kindred pursuits, to the number of two hundred, composed the gathering at the opening session. About two blocks from the Institute, three stories of a building contained exhibits from makers of things to wear, to eat, and of household utility—all with health in view. This exhibition was part of the meeting, and continuously open.

An indication of the widespread interest in the purposes of the Association was furnished by the responses to the Secretary's roll, which showed that all parts of the country were represented. Among the delegates were Prof. Hosmer A. Johnson of Chicago, President of the Association; Dr. Irving A. Watson of Concord, N. H., Dr. Jerome Cochran of Montgomery, Ala., Dr. Frederick Montzambert of Quebec, Dr. J. Berrien Lindsley of Nashville, Prof. Charles A. Lindsley of Yale College, Dr. Henry B. Baker of Lansing, Mich., Dr. Joseph M. Toner of Washington, Dr. Ezra M. Hunt of Trenton, and Dr. Peter H. Bryce of Toronto.

The routine business was not allowed to occupy much time. Having disposed of it, a paper on "The Overshading of Our Homes," from the pen of Dr. William Thornton Parker, of Newport, R. I., was read by Prof. Lindsley. The paper was an argument for sunlight in houses. He said among other things:

"Concerning the preservation of our forests it would be difficult to write too much, and everywhere there should be a desire to preserve and protect them. We are witnesses this year of the terrible calamities resulting from the wholesale destruction of our forests, but perhaps we do not sufficiently consider that the general climate suffers from this cause, and that indirectly much of disease and death results from the wanton destruction of these trees so essential in the general condition of healthful landscape.

"Houses overshadowed are not healthful, no matter how commodious or well built they may be. Too many trees near sleeping- or living-rooms exercise a very injurious influence, and induce various diseases—notably rheumatism, heart disease, consumption, general debility, and anæmia.

"As a local board of health have a right and duty to close a house injurious or dangerous to life and health, and forbid its occupancy until suitable sanitary requirements have been observed and causes of danger removed, so it would almost seem as a reasonable inference that a national board of health should have power to discipline summer resorts and other localities, and prevent the seekers for health and pleasure from risking their own and their children's lives in places desperately neglected, unhealthy and dangerous."

The second paper, "Clothing in its Relation to Hygiene," was read by Dr. James F. Hibberd, of Richmond, Ind. The author of the paper had concluded from his observations as a practitioner that the majority of people dress so warmly as to prevent the skin from exercising its normal functions. This furnished the text for the paper. While in general terms clothing should satisfy the demands of modesty and of æsthetic tastes, its only hygienic utility is satisfied when it provides against the vicissitudes of weather and seasons.

Dr. Hibberd summed up his topic as follows:

"It seems time that the relation of clothing to the health of the people of temperate climates engaged in civil industries should be reviewed, and the points for investigation may be summarized thus, viz.:

"1. The popular and professional estimate of the hygiene of the skin is much below its real importance.

"2. The physiology of the skin cannot be largely interfered with without endangering the general health.

"3. One of the most influential factors in the sound health of a man is to establish and maintain in his organization a resisting power to the causes of disease.

"4. The tendency is to overdress, enervating the skin and curtailing its power, and thereby the power of the whole system to resist the causes of disease.

"5. A proper exposure of the surface of the body to environing low temperature is a valuable tonic.

"6. Ventilation of the skin is indispensable to good health.

"7. Habit may enable one to bear wide differences in clothing under similar surroundings without detriment, and this should impress the necessity of cultivating correct habits of dress."

Both papers were heard with close attention, as was proved by the discussion which followed them, in which the views of the writers were amplified.

At the Tuesday afternoon session, a paper on "Causes and Prevention of Infant Mortality," by Jerome Walker, M. D., of Brooklyn, was read. Dr. Walker had found from statistics that the common belief was not sustained that infant mortality in this country had decreased of late years. He had been led to conclude that it might be reduced under favoring conditions, but such conditions would never be reached while mere political doctors were in control of the health boards of the country. The hope of the future

lies in a radical change in this respect, and in the sanitary education of the masses. The speaker said:

"We may conclude from what is known of institutions for children:

"1. That a large proportion of the deaths in them are preventable.

"2. That the younger the children and the larger the number, the greater is the mortality.

"3. That the mortality can be lessened, but the decrease costs money, time, patience, and energy; and to obtain the best results the attending and resident physicians should be reliable, should be given control over all medical and sanitary matters, and should be held responsible for the same."

The next paper, on "The Relations of the Dwellings of the Poor to Infant Mortality," by Alfred F. White, C. E., of Brooklyn, went over some of the ground covered by Dr. Walker's paper. Mr. White quoted statistics to show that such institutions as the Peabody Association, of London, were needed here. Through the reforms thus instituted in tenement-house construction, the infant mortality of London had been reduced to 15 per cent. of all deaths, while in this city it was 26 per cent.

After general discussion of the two papers, Dr. George Homan, of St. Louis, Secretary of the Missouri State Board of Health, read a paper advocating the employment of better men as local health officers, at higher pay.

Tuesday evening the delegates and their friends went to the Academy of Music. Dr. J. H. Raymond opened the exercises with a short address of welcome, in which he said that the influence and teachings of this Association had subjected to scientific control pestilence of every kind. Mayor Chapin welcomed the delegates on behalf of the city, and Dr. Hutchins performed a similar office for the medical profession. Then came the address of President Johnson. His purpose, he said, was to talk to the people, not to scientists. By comparisons he was able to show what science had done for health in recent years. He said:

"A death from typhoid fever now means not so much a dispensation of Providence as it means foul water, foul food, or foul air. A city is decimated by a pestilence, and it is found that its foundations are honeycombed with cess-pools and its drinking-water is diluted sewage. The judgments of God, in the light of these revelations, become no more mysterious than the pains of the child that laughingly thrusts its tiny finger into the brilliant flame only to feel the terrible infliction that follows. There has come to be an enthusiasm in the medical profession on this subject which has made itself felt in various ways. This zeal has communicated itself to the public. An intelligent foundation has been laid for sanitary reform.

"As typhoid fever is a greater calamity than Texas fever, as Asiatic cholera is more to be dreaded than hog cholera, so do we need a department of public health more than a department of agriculture, a bureau of vital statistics more than a bureau of animal industry.

"The death-rate of twenty-six of the principal cities of America, with a population of 9,873,448, is 20 per 1,000. I think it morally certain that this rate could be reduced by means and methods now known to sanitary science to 16 per 1,000, and probably still less than that. The death-rate for London for the year 1888 was 18.5 per 1,000. This can be still further reduced. That of New York and Brooklyn for

the same year, taken together, was 25.5 per 1,000—New York, 25.9; Brooklyn, 23.7. The death-rate of these two cities, if reduced to that of London, would secure a saving of 7 per 1,000, or annually 15,986 lives. These lives are public wealth.

"But this is not all. For one death annually, two persons are sick during the entire year; or, in other words, there are two years of disabling sickness to one death—31,972 years in New York and Brooklyn of sickness, preventable sickness, annually. The value of these years of sickness cannot be reached with accuracy, but the wages lost on account of sickness, the cost of care and maintenance during sickness and convalescence, and the money value of the lives destroyed, considering them only as machines, will, in New York and Brooklyn, reach annually into the millions. I venture to suggest to the business men of these cities that this loss is enough every year to buy a great railroad, or to build and subsidize a fleet of ocean-going steel steamships."

The first paper of the Wednesday session, entitled "United States Census in its Relation to Sanitation," was read by Dr. John S. Billings, surgeon in the United States army. Dr. Billings regarded the census as absolutely indispensable to sanitarians and others interested in ascertaining death-rates and other facts in regard to the health of great cities. In discussing the scares created by the fear of contagion in great cities, he said:

"Occasionally it is possible to get up a cholera, or yellow-fever, or small-pox, or typhoid-fever scare, and then to get a little money for sewerage, or for street- and alley-cleaning; but these spasmodic reforms do not last long, and in most cases do not amount to much. You have got to produce constant, undeniable evidence that the work is needed and useful; evidence that will convince the press and the majority of the community, and this evidence must be mainly death-rates, to which should be added all the sickness-rates that can be obtained. To give these death-rates you must have a complete registration of deaths and a corresponding enumeration of the population, and ought to have a complete registration of births."

[Dr. Billings's paper is printed on pages following this report.—SEC'Y.]

After a brief discussion of this paper, Dr. McCormick, of Kentucky, introduced a resolution inviting delegates from Mexico and Cuba to attend the next convention. It was referred to the Executive Committee.

Dr. Ezra M. Hunt, Secretary of the New Jersey State Board of Health, read a paper on "The Prevention of Phthisis Pulmonalis, and Methods for its Limitation;" after which the room was darkened and Health Officer Smith gave an illustrated lecture entitled "The Improvement of the New York Quarantine Station."

In the afternoon the delegates were entertained by an excursion on the "Laura M. Smith," and went to the quarantine station, where they were the guests of Dr. William M. Smith. After the reception there, several other points of interest were visited.

At the Thursday morning session the paper of Dr. Ezra M. Hunt, of New Jersey, on "The Prevention of Phthisis Pulmonalis, and Methods for its Limitation," was discussed. Dr. J. S. Billings was the principal speaker, and the debate was wholly technical.

A very important paper on "The Art of Cooking," was read by Edward



Atkinson, LL. D., of Boston. [An abstract of this interesting paper is printed on subsequent pages in this report.—SEC'Y.]

Dr. R. Martin, Health Commissioner of Milwaukee, Wis., read a paper on the "Disposal of Garbage." He had little faith in the theory of cremation, and said:

"Among all the plans for doing this work I do not believe there is one that gives absolute satisfaction, and others I know to be an intolerable nuisance. I was surprised when I examined the crematory in Chicago, for a more abominable nuisance could not well be placed on any half-acre than I found on that one. Cremation as a system has had its day, and a brief one it has been.

"The present system in the city of Milwaukee is the Merz system, which, from June 11th last, has given the best of satisfaction. The quantity of garbage collected is forty tons daily, which, with that brought to the works by the commission dealers, wholesale men and grocers, brings the total up to fifty tons, which is promptly disposed of. The works are situated in the slaughter-house district, and the building is a two-story frame, 62x110 feet. The garbage teams drive up an incline roadway to the second story, where the garbage is thrown on the floor to be scraped into the driers, of which we have eight. The time occupied in drying the garbage varies, of course, with the quantity and amount of moisture, but is usually from eight to eleven hours."

The next paper was by Dr. S. S. Kilvington, Commissioner of Health at Minneapolis, Minn. His subject was "Statistics on River Pollution, with Observations Regarding the Destruction of Garbage and Refuse Matter." He said:

"In the Mississippi river during the past year, eight cities alone deposited 152,675 tons of garbage and offal, 108,250 tons of night-soil, and 3,765 dead animals. In the Ohio river five cities in the same period dumped 46,700 tons of garbage, 21,157 tons of night-soil, and 5,100 dead animals. In the Missouri river four cities cast 36,000 tons of garbage, 22,400 tons of night-soil, and 31,600 dead animals. No theory of self-purification of running water will dwarf the magnitude of this sanitary crime."

The speaker doubted the practicability of using garbage as a fertilizer, because, while it contained fertilizing elements, they were not sufficiently concentrated for agricultural purposes. The trouble with the Merz system was that it dealt only with garbage which had to be separated from other refuse. He favored cremation.

A paper by Prof. W. O. Atwater, of the Department of Agriculture at Washington, came next. It was on "Food in its Relation to Health." He argued that people eat too much generally, and consume too many sweet-meats in particular.

Then debate was begun on Dr. Kilvington's paper. Dr. Edward Clark, Health Officer of Buffalo, advocated the Merz system. Henry E. Fleischmann, of New York, took the same ground; and after a few more speeches, Dr. Gibbon of the Marine Hospital offered a resolution providing that the committee on garbage be increased from eight members to nine, and be asked to report at the next convention as to the best methods of handling refuse. This was adopted.



The morning session closed with the postponed report of Dr. Wells on the Museum of Hygiene.

At the afternoon session, the first paper was read by Dr. E. Plater, of Ottawa, Canada. His subject was "The Prevention and Restriction of Tuberculosis in Man." He dwelt upon the importance of lung development as a means of prevention, and favored systematic exercises in the schools, calculated to produce such developments. Similar action might also be wise in the militia training. Consumption, the result of tuberculosis, was a far more insidious and dangerous foe to health than any of the contagious diseases. Dr. Plater believed that several millions of circulars might profitably be distributed, giving information in a popular form as to the causes of consumption, and the best methods of avoiding them. Such leaflets had been sent out by the Health Department of New York city in a form that was highly satisfactory, and could not fail to do great good.

Dr. P. H. Kretzschmar, of Brooklyn, read the next paper, on "The Prevention of Pulmonary Consumption." He said there was no such thing as consumption without bacilli. For that reason he had no doubt that the disease could be spread by contagion. Cases where this had undoubtedly occurred, as between husband and wife, were on record. The same sort of bacilli which produced pulmonary consumption in man were produced in the diseases of certain animals. Every phthisis patient was giving out in his expectoration millions of such bacilli. It would not pay to isolate advanced cases when incipient ones were allowed to scatter the seeds of disease in the streets, saloons, ferry-boats, and street cars. Again, a system of isolation in New York, for example, would be of no service if neighboring States like New Jersey refused to adopt the same plan. If the spittoon occupied the place in the affairs of modern life that it deserved, there would be far less danger of pulmonary consumption. "Where do we find spit-boxes?" he asked. "Not in the streets, not in the ferry-boats, not in the street railroad cars, not in the steam railway cars, except in a few palace cars." Expectoration in one's handkerchief was most dangerous. It was of the greatest importance that the rooms in which consumptives lived should have no carpets. Linoleum or oil-cloth was to be preferred.

After these suggestions, Dr. Kretzschmar went on to treat of the influence of hereditary pulmonary disease. He laid down the following propositions:

"First—If there are many children in a family, those born after the sixth or after the seventh are apt to develop pulmonary consumption.

"Second—If the children in a large family are born at short intervals, say one year, the younger ones are apt to develop pulmonary consumption.

"Third—If the offspring of healthy parents, born under conditions named above, escape the disease, their children are apt to develop pulmonary consumption.

The Doctor confessed that these views were novel, but said he believed that they were fully justified by his own experience and that of other physicians who had recorded their observations. Out of 556 cases which had been

treated in Dr. Brohmer's sanitarium in Goerhershersdorf, 4 were suffering from other diseases than consumption, 46 failed to give a satisfactory account of their family antecedents, 184 were offsprings of consumptive parents or grand-parents, in 65 cases the disease came from the father, in 76 from the mother, in 14 cases from both sides, 16 times from the father's parents, 12 times from the mother's parents, and twice from the grand-parents of both father and mother. Of the 322 remaining cases, 109 were from families with many children, and none of them were earlier born than sixth or seventh; 32 belonged to families where children had followed one another rapidly, mostly at intervals of one year; 147 were cases of acquired disposition. Of the 175 cases unaccounted for, 135 had parents who were born subject to conditions described in the Doctor's first proposition.

In the discussion of the paper, Dr. Hibbard, of Richmond, Ind., dwelt chiefly on the necessity of easy-fitting clothing as a means of prevention.

Then Dr. Plater took the floor in radical opposition to the whole theory of hereditary consumption. He said he thought that idea "had entirely died out among medical men." He was briefly answered by Dr. Kretzschmar, who held his ground. Dr. Webster said the Maine State Board of Health had followed the plan of Dr. Plater for distributing leaflets filled with popular information on ways of preventing the spread or the inception of pulmonary diseases.

Dr. Cyrus Edson, of New York, then read a paper on Sulphur Dioxide as a Disinfectant. He had found this of great importance in tenement-house work against contagion in New York. This statement precipitated a discussion, in the course of which the views of Dr. Edson as to the value of this agent were supported by Dr. Gray, of Montreal, who told about its use in successfully stamping out a terrible epidemic in his city within six months. He said sulphur dioxide was of doubtful value only in the case of diphtheria.

Dr. Raymond, of Brooklyn, said the use of water with this agent was absolutely necessary. He asked whether the New York authorities had any record which would show the permanent effect of disinfection at any given time. Dr. Edson replied that the New York record showed everything about the sanitary history of every house in the city where contagious diseases had occurred for three years back. Dr. Maxwell, of Florida, opposed Dr. Edson's conclusion, and insisted that it was doubtful whether sulphuric fumes were a safe disinfectant in any form. He backed up his position by reverting to the complete failure of this disinfectant in the yellow-fever epidemic at Tampa, Florida, at Memphis, Tennessee, and elsewhere in the South.

Many delegates took part in this debate. Dr. Edson said that the use of water with sulphur dioxide was a point on which he had not touched. Unhappy memories in his experience were connected with this practice. He tried it on 500 pairs of children's trousers. The water made a bleaching-powder out of the disinfecting agent, and he had to pay damages on the trousers.

A general impression seemed to prevail that, while sulphur was of use, it needed to be used with great care and thoroughness. Some delegates favored the substitution of chlorine. In answer to a question, Dr. Edson explained that in New York when a room was to be disinfected, three pounds of sulphur were used for every 1,000 cubic feet of air. The sulphur was put on a dish in a tub of water, four ounces of alcohol to every three pounds were poured over it, and the alcohol was ignited.

Dr. John H. Rauch, of Springfield, Ill., sent in the following preamble and resolution:

*"Whereas, Asiatic cholera, leaving its usual restricted bounds, threatens to advance by the same line that it has followed in the last four epidemics, be it*

*"Resolved, That the American Public Health Association desires to call renewed attention to this fact, and to urge that the quarantine authorities on the Atlantic and Pacific seaboard, and boards of health throughout the country, make every effort to prepare for this threatened danger."*

The resolution was at once referred to the Executive Committee.

In the evening, a paper on "Sanitary Entombment," by Rev. Charles R. Treat, of New York, was the first feature presented.

A carefully-written paper on "Do the Sanitary Interests of the United States Demand the Acquisition of Cuba?" was read by Dr. Benjamin Lee, Secretary of the Pennsylvania State Board of Health. He summarized his conclusions as follows:

"The exigencies of travel and traffic render rapid and constant communication between the United States and Havana a necessity. Havana is one of the most notorious breeding-places of yellow fever, and is never free from its presence. The only means by which the germs of this disease can be eradicated are a proper system of sewerage and drainage, which shall deliver the filth of the city at a distant point into the waters of the ocean, and the removal of all the feculent soil. There is no hope that the Spanish government will ever undertake a work of this magnitude for a dependency.

"The introduction of yellow fever into the United States through both legitimate and illegal channels of trade must be of frequent occurrence as long as this condition of things continues. A single wide-spread epidemic of yellow fever would cost the United States more in money—to say nothing of the grief and misery which it would entail—than the purchase-money of Cuba.

"The precautions against the spread of small-pox in Cuba are entirely inadequate, and are rendered ineffective by reason of the superstition of a large proportion of the inhabitants. Hence, epidemics of that loathsome disease are of frequent occurrence.

"Leprosy prevails in Havana and the island of Cuba to a serious and constantly-increasing extent. Leprosy is absolutely unrestricted in this island. While there is an immense and admirably-administered leper hospital in Havana, its inmates go and come among the residents of the city and country at will, until locomotion is rendered impossible by mutilation. The ravages of the disease are confined to no class or race. Leprosy has already obtained a foothold in the United States in the ports nearest to and in most constant communication with the island of Cuba. Leprosy has but one history, that of constant progression unless it is checked by isolation of the most absolute and unremitting character. No center of leprosy has

ever originated in the United States. The importation of the first case of a series can always be distinctly traced."

Dr. Lee presented resolutions, which, after stating the impracticability of looking for relief from danger while Cuba remained a dependency of Spain, "respectfully urged upon his Excellency the President of the United States the expediency of opening negotiations with the Spanish Government with a view to an amicable transfer of the said island to the United States," and in the meantime advised increased quarantine strictness. These were referred to the Executive Committee. The points in the paper covering the horrors of leprosy were illustrated by Prince A. Morrow, of New York, on the stereopticon.

A paper on "Railway Sanitation," by Dr. Samuel W. Latta, medical examiner for the Pennsylvania Railroad Voluntary Relief Department, was read, and after some general discussion the Association adjourned.

The closing session was held Friday morning, and the following officers were unanimously elected: President, Dr. H. B. Baker, Michigan; First Vice-President, Dr. Frederick Montizembert, Province of Quebec; Second Vice-President, Dr. J. H. Raymond, Brooklyn; Secretary, Dr. Irving A. Watson, New Hampshire; Treasurer, Dr. J. Berrien Lindsley, Tennessee. Executive Committee: Dr. L. F. Salamon, Louisiana; Dr. W. Bailey, Kentucky; Dr. H. B. Horlbeck, South Carolina; Dr. Walker Wyman, Washington, D. C.; Dr. J. H. Kennedy, Des Moines, Ia.; Dr. P. H. Bryce, Toronto, Ont.

It was decided to hold the next meeting of the Association at Charleston.

A paper on "The Necessity for a More Rigorous Inspection of Meat-Producing Animals at the Time of Slaughter" was read by D. E. Salmon, D. V. M., Chief of the Bureau of Animal Industry, Washington, D. C. Dr. R. O. Beard's paper on "The Causes of Infant Mortality" was read by Dr. Ginon, of the United States Naval Hospital, Brooklyn. The papers by Microscopist Edgar Richards, of the United States Treasury Department, Washington, D. C., on "The American Methods of Manufacturing Oleomargarine," and "Oleomargarine," were voted to be read by title only, and printed with the report of the meeting.

On motion, the Association adjourned to meet in regular annual session at Charleston, South Carolina, in November, 1890.



MISCELLANEOUS PAPERS.

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HEALTH TOPICS, WEATHER REPORTS, SPECIAL REPORTS ON CONTAGIOUS DISEASES.

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The following very interesting paper was read before the American Public Health Association at its seventeenth annual meeting, held in Brooklyn, N. Y., October 22-25:

## UNITED STATES CENSUS IN ITS RELATION TO SANITATION.

BY JOHN S. BILLINGS, M. D., LL. D.,

Major and Surgeon United States Army, Washington, D. C.

Theoretically we all agree that vital statistics are the foundation of public medicine, but, practically, I suppose that the majority of sanitarians and physicians think that they are not essential to the work of a health officer or a board of health, although they may be desirable; that the main objects in sanitary work are to see that the water-supply is good, that garbage and excreta are promptly removed or destroyed, that no filth is allowed to accumulate in the vicinity of habitations, that contagious diseases are controlled by isolation and disinfection, and that plenty of fresh air be provided in schools, churches, etc.—and that all this can and should be done whether death-rates are known or not. Occasionally it is possible to get up a cholera, or yellow-fever, or small-pox, or typhoid-fever scare, and then to get a little money for sewerage, or for street- and alley-cleaning; but these spasmodic reforms do not last long, and in most cases do not amount to much. You have got to produce constant, undeniable evidence that the work is needed and is useful; evidence that will convince the press and the majority of the community, and this evidence must be, mainly, death-rates, to which should be added all the sickness-rates that can be obtained. To give these death-rates, you must have a complete registration of deaths, and a corresponding enumeration of the population, and you ought to have a complete registration of births.

I shall speak to-day only of the enumeration of population, an absolutely essential factor in the preparation of death-rates. As you know, we rely mainly on the decennial United States census for this enumeration of population. In a few States there is an intermediate State census, and occasionally in cities there are police censuses, school censuses, etc., but these last relate only to a particular class of the population, and are always incomplete and unreliable for the purposes of vital statistics. Before this Association meets again, the eleventh United States census will be taken, and its methods, its completeness, and the mode in which its results will be tabu-



lated and published, are of great interest and importance to all who are interested in sanitary science, or in public-health work in this country. Let us consider briefly what the health officials of a State or city want in the way of census data, and first, as to the needs in a city such as New York or Brooklyn. For the whole city, and for certain districts of the city, we wish to know the number of residents. Moreover, we wish to know not merely the total number, but the number in each group of ages, of each sex, of the married and single, of those engaged in certain occupations, and for certain districts of certain races. One of the most important questions, then, to be settled before the census is taken, is what shall be the boundaries of the special districts of the city for which a separate statement of the population is desired. In some cities the wards form fairly satisfactory districts for the purpose, and where this is the case it makes the problem very easy. The census publishes the total population by wards, but heretofore it has not done this with distinction of sex and age. I have no doubt, however, that if the officer charged with the registration of vital statistics makes timely application to the Superintendent of the Census he can obtain from him in due time a statement of the population by wards, with distinction of sex, and of color, and of age, or at all events, of the number under 1 year and under 5 years of age, which is the information most essential in a sanitary point of view. Also, if there are one or two special districts in the city of which he specially desires to know the population, he can probably arrange with the supervisor of his district to obtain it if he communicates with him before the enumerators' districts are fixed.

For about a dozen of our large cities it is proposed to make a systematic division of the area into sanitary districts, having special relations to altitude, character of habitations or of population, etc., and to have special death-rates calculated for each of these districts. This is being done in conference with the health authorities of these cities, and it is hoped that in this way some very interesting data will be obtained, which will serve as a foundation for sanitary work in the future. Such districting has been arranged for Boston, New York, Philadelphia, Brooklyn, Washington, New Orleans, and Louisville, and the work is in progress for other cities. For each city taken as a whole, the details of population as to sex, color and age will be given in greater detail than has been done in previous censuses, and this will be found extremely useful by health officers wherever there is a complete system of registration of deaths. In investigating the details of the record of deaths kept in different cities, I have noted deficiencies in a few of them, to which I wish to call the attention of all who have to do with the registration of vital statistics.

*First*—All deaths occurring in hospitals should be charged to the ward or district of the city from which the patient was taken to the hospital, when this can be ascertained; otherwise, the death-rate in the ward in which the hospital is located will be too high, and in the other districts will be too low.

*Second*—The birth-place of the parents of the decedent should be reported. We want to know the race of the decedent: whether he was Irish, German, Italian, or American, and to give merely his birth-place is not sufficient.

*Third*—It is very desirable that in all cases of deaths of colored persons it should be stated whether the decedent was black, or of mixed blood, such as mulatto or quadroon.

One of the most important questions in the vital and social statistics of this country relates to the fertility, longevity and liability to certain diseases of those partly of negro and partly of white blood, and the only way to obtain certain data on this subject is through the registration of vital statistics. Under the provisions of the law providing for the census, the living colored population is to be enumerated with distinction as to whether each person is black, mulatto, quadroon, or octoroon, and we need the same distinction for all colored persons dying during the census year to enable us to calculate comparative death-rates. Wherever there is a fairly-accurate registration of deaths, which now exists in several States and in over one hundred cities, the next census will afford the means of calculating death-rates with distinctions of color, sex, and age, which will furnish important indications for sanitary work. For all cities of 10,000 inhabitants and upwards, it is proposed to collect as complete information as possible with regard to altitude, climate, water-supply, density of population, sewerage, proportion of sewered and non-sewered areas, and other points bearing on the healthfulness of the place, which will permit of interesting comparisons with the death-rates. Owing to various causes, the reports of the last census were so much delayed in publication that their practical interest to sanitary officials was greatly diminished, and it was not possible to secure the distribution of those volumes relating to mortality and vital statistics, to the social statistics of cities, and to the insane, idiots, deaf, and blind, to many of those sanitarians and physicians who most appreciate the information they contain, and who would make the best use of them. I have no authority to make specific promises, but I believe that the reports of the next census, in which the members of this Association are specially interested, will be published as soon as it is possible to complete them, and will be distributed to those sanitarians and physicians who use them in their work, and who make timely request for them; and thus believing, I do not hesitate to ask the cordial coöperation of all members of this Association to make the data upon which these reports are founded as full and accurate as possible. I hope that the vital statistics and statistics of cities, as collected for the eleventh census, with the coöperation of the physicians of the country and of municipal officers, will be so compiled and published as to be an unanswerable argument in favor of systematic public sanitary work, and of the granting by State and municipal authorities of the funds which are absolutely necessary for the proper performance of such work. I know that the Superintendent of the Census has a strong and intelligent interest in the

completeness and accuracy of these statistics, and will do all in his power to secure their prompt publication and wide distribution; but to make the data so complete as to be useful in every town and township where there is no registration, he must rely largely upon the aid of physicians and of all intelligent citizens to correct and supplement the results which will be obtained by his army of enumerators. This aid has been already asked for by circulars and registers distributed to physicians, and it will be again asked for by the enumerators themselves when they come to make up their records. Let us all do our best to help them, and thus to make the vital statistics of the next census not only an accurate representation of the life stream of a great nation, but a powerful means of promoting the health and welfare of our people.

The following is an abstract of a very interesting paper read before the American Public Health Association, at Brooklyn, N. Y., in October, 1889:

#### THE ART OF COOKING.

BY EDWARD ATKINSON, LL.D., BOSTON, MASS.

I will challenge attention and discussion by first submitting some very positive and dogmatic statements, subsequently sustaining them by such proofs as I have to offer:

1. Special apparatus for boiling and frying has been adequately and suitably developed for the use of those who can afford these somewhat wasteful methods of preparing food, yet excellent when skillfully practiced.

2. The ordinary methods of frying are utterly bad and wasteful.

3. Bread may be baked suitably in a brick oven, and also economically, when the work is done upon a large scale.

4. It is very difficult to bake bread in a suitable way in the common iron stove or range; for this, among other reasons, most of the bread consumed in this country is very bad, although we have the greatest abundance of the best material.

5. Meats may be well roasted in a costly manner before an open fire.

6. Aside from the exceptional apparatus or methods named, substantially all the modern cooking-stoves and ranges are wasteful, and more or less unsuitable for use. All the ordinary methods of quick baking, roasting and boiling are bad; and, finally, almost the whole of the coal or oil used in cooking is wasted.

7. The smell of cooking in the ordinary way gives evidence of waste of flavor as well as a waste of nutritious properties; and in most cases the unpleasant smell also gives evidence that the food is being converted into an unwholesome condition, conducive to indigestion and dyspepsia.

8. Nine-tenths of the time devoted to watching the process of cooking is wasted; and the heat and discomfort of the room in which the cooking is done are evidence of worse than waste.

9. The warming of the room or house with the apparatus used for cooking is inconsistent with the best method of cooking, and might be compassed at much less cost if the process of cooking were separated from the process of warming the room or dwelling.

10. No fuel which cannot be wholly consumed is fit to use in the process of cooking; and any chimney which creates a draught upon the fuel when in the process of combustion, like the ordinary chimney of a house, is worse than useless, since it wastes the greater part of the heat generated from the fuel.

The true science of cooking consists in the regulated and controlled application of heat, by which flavors are developed and the work of conversion is accomplished. For this purpose a quantity of fuel is required which is most absurdly small compared to the quantity commonly used. Compare the ordinary method of using fuel for cooking with the scientific use of fuel for the development of power in the steam-engine. The sheet of lightly-sized linen paper, abstracted from the unused part of an old ledger, on which I am now writing the first draught of this essay, measures 13 inches by 9 inches, equal to 117 square inches, and weighs half an ounce. In solid form it measures half a cubic inch. If consumed under the boiler of a modern marine steam-engine, such as is used in the freight steamers that carry our wheat to England, two sheets of this paper in a solid form would be equal to 71 per cent. of the calorific value of a cube of bituminous coal of the same size, and would drive a ton of wheat, and its proportion of the steamship,  $1\frac{1}{10}$  miles on the way from the producer to the consumer, at the present standard of power developed from coal. Yet not over 12 per cent. of the actual power of the heat which this scrap of paper will yield would even then be actually converted into work. A cube of pure wood pulp of the same size will do the same work. On the other hand, wood pulp, until ignited, is the best available non-conductor of heat. I therefore build my ovens in greater part of wood pulp prepared so as not to ignite at any degree of heat which is necessary for cooking; but even in my oven it requires one quart of oil, measuring a fraction under fifty-eight cubic inches, to cook fifty to sixty pounds of bread, meat and vegetables in four successive charges occupying two hours each. Compared with the application of heat to the development of power, even my oven must be utterly condemned as wasteful of fuel; but compare my quart of oil with the hodfuls of coal that would be required to cook sixty pounds of food in the common range or stove, and then what is the verdict? I now venture to submit the data of a dinner prepared by myself, but little out of the usual course, as an example of the common practice in my own family, and of what may be done substantially with one lamp. The dinner was provided for my own family of seven persons, with five guests, and it also sufficed for four servants—sixteen in all—with something left over.

My summer kitchen is fitted with a cooking-stove, as it is more convenient



to use the top of the stove, heated with hard-wood chips, for boiling water, heating the soup and boiling potatoes, than it is to use a kerosene-oil stove of the common kind. On this stove the soup made the day before on the Aladdin cooker was reheated, the potatoes were boiled, and the hot water was provided. The dinner cooked in the Aladdin oven consisted of three to four pounds of fresh blue-fish, just caught, cooked in imitation of broiling one hour; six to seven pounds leg and loin of lamb, roasted one and three-fourths hours; three tame ducks, weighing about seven pounds, roasted one hour; squash cooked in its own juice with but very little water, one and three-fourths of an hour; stuffed tomatoes cooked three-quarters of an hour; a large apple-souffle pudding, baked one hour. The oven having been previously heated one hour, the lamb and the squash were first put in; later the fish was added; while these were being served the ducks and the pudding were being cooked. The use of the lamp for the whole service was four hours; the oil consumed, one pint, cost less than two cents. The cook's estimate of the coal which would have been required for the dinner, had it been cooked in the large stove which has been used in other years, was one and a half to two ordinary hodfuls.

The preparation of the coffee berry is the most familiar example of the development of its properties by the right application of heat. If the berry is dried, ground and made into an infusion without being roasted, no true or drinkable coffee can be made from it. If overheated and burned, the infusion is acrid and unwholesome. But when the berry is carefully roasted and ground the infusion makes true coffee. The flavor and other properties are the actual product of the heat when scientifically applied. The flavor of the peanut is developed in the same way. In the treatment of grain, none yields so great a difference in flavor, according to the method of cooking, as the meal of maize or Indian corn; but I find the wheaten bread, whether made of whole or of bolted flour, yields a much finer flavor when baked two or three hours in my pulp oven at 250 to 350 degrees Fahrenheit, than when quickly baked in a common stove or range in an hour at an unknown but admittedly much higher degree of heat. The flavors of white kinds of fish, such as cod, haddock, flounder, scup and the like, which are much impaired by the ordinary methods of cooking, are very finely developed when slowly cooked in my oven; and lastly, all kinds of meat and poultry develop their respective flavors in the most appetizing manner when roasted in my pulp oven at such low degrees of heat as not to give off any smell or to dissociate any of the volatile elements of the juices or fats, while for game nothing can equal it. Quail and partridge come out rich, juicy, and of almost too full a flavor. My Aladdin ovens, so called, are adapted to methods of cooking corresponding to broiling, roasting, baking and braising, but they can also be used for boiling and simmering. My Aladdin cooker, so called, in which the heat is conveyed through water, is



devoted wholly to boiling, stewing and simmering—especially the latter. I neither attempt nor desire to fry anything in either kind of apparatus. About nine-tenths of all the cooking of my somewhat large family has been done with this apparatus for nearly two years, and I also have an office lunch-room for the use of about twenty employes, in which no other apparatus is or can be used.

My summer kitchen at my seaside house is fitted with a grill, which is very seldom used; it proves to be the most convenient to use the cooking-stove, heated with hard-wood chips, for boiling the water for tea, and for occasional frying. My winter kitchen is a large one, and it depends upon the range for warming it. The range, therefore, continues to be used to some extent for cooking, mainly for preparing breakfast; but I contemplate substituting a special stove without any oven, which will heat the room with much less coal, the top of the stove being fitted for cooking in the ordinary way. Neither the oven of the stove in summer nor of the range in winter is now used for cooking; therefore the kitchen is never overheated, and the food is never spoiled. We have occasionally failed to cook a large joint of meat for a sufficient time, but we have never spoiled a dish in the process of cooking since the pulp or jacketed oven was adopted.

What, then, are the simple principles of the science of cooking? I think they may be stated in a few very plain terms:

1. The heat should be derived from fuel which can be wholly consumed or wholly converted into the products of complete combustion without any chimney except that of the lamp or burner. The fault with coal, especially anthracite, is that it is not evenly or fully consumed; hence the need of a chimney to take away the gases developed and not wholly consumed; but the chimney also carries off the greater part of the heat. It is very evident that the crude combustion of coal and the direct application of the heat generated will ere long give way to more scientific methods of consuming the gaseous products, and of deriving the heat from the final combustion of the gaseous products in all arts. In the matter of cooking, kerosene oil burned in any one of the types of lamp which have a central duct to convey oxygen from below to the inner side of a circular wick, when properly trimmed and served with well-distilled oil, gives substantially perfect combustion. The same may be said of illuminating gas when used in one of the burners of the Bunsen type, which supply an excess of oxygen and yield the blue flame. The combustion of oil and of gas can be brought under absolute control by gauging the size of wick or burner to the work to be done.

2. The oven in which the food is to be subjected to this measurable and controllable source of heat, must be so constructed that the heat imparted to it may be entrapped and accumulated up to a certain measure or degree and then maintained at that temperature without substantial variation until

the work is done. This can be done by jacketing the oven in a suitable way with material which is incombustible, and also a non-conductor of heat.

3. There should be no direct communication between the true oven or receptacle in which the food is placed and the source of heat, lest the products of incomplete combustion should sometimes taint the food, and lest the food should be exposed to being in places burned or scorched.

These three conditions are all accomplished in the two somewhat crude, and probably incomplete, inventions which I have named the Aladdin cooker and the Aladdin oven, in both of which the heat derived from common lamps, such as are used for lighting, may be stored or accumulated so as to do the work of cooking in a very perfect manner. In the cooker, the heat is imparted to water in an attachment to a metal-lined wooden box corresponding to the water-back of the common range or stove, and the work is done by the contact of the hot water with the outside of the porcelain vessels in which the food is placed, or by the steam generated when the water is heated to the boiling-point. In the oven, a column of heated air is carried from the chimney of the lamp to the inside of an outer oven made chiefly of prepared wood pulp, but outside of the inner sheet-iron or metallic oven in which the food is placed, which inner oven is separately ventilated. Next, people must be persuaded that a better and more nutritious breakfast can be made ready to eat as soon as the family are out of bed, by putting meat stews, oat-meal, brown bread and many kinds of puddings into the cooker and simmering all night by the use of a single safe lamp, than in any other way. People must be taught that the dinner can be put into the oven when both husband and wife go to the mill to work, and so treated that it may be found perfectly cooked at noon, without requiring any attention in the interval. People must be taught that the best of bread, raised with good yeast, can be mixed and kneaded between 12:30 and 1 P. M., placed in a bread-raiser which will raise it ready for the oven at 6 or 7 P. M., and that this bread may be perfectly baked in two hours by the heat of the evening lamp, which at the same time serves to give light for reading or sewing. All this can be accomplished with my crude apparatus. In a family of five adults, or of four adults and two children ten or under, making an average family of five persons, in which one-half the income is spent for food and fuel, 25 cents a day per adult being spent for food, the corresponding average expenditure per adult —

For clothing will be.....	7 to 9 cents.
For liquor may be.....	2 to 4 “
For sundries will be about.....	5 “

And the remainder for rent or shelter.

If no liquor is used.....	9 to 11 cents.
If liquor is used.....	7 to 9 “

Now I think it is very safe to put the waste of food material at 20 per

cent., or 5 cents a day; if this misspent force and one-half the average cost of liquor, or 2 cents a day, could be converted into shelter—that is to say, to providing a more ample dwelling by either buying or leasing—it would suffice to enlarge the present quarters by one-half to three-fourths. Five cents a day per adult comes to \$1,000,000,000 or more a year, counting two children of ten or under as equal to one adult. But the greater benefit which would come from a true art of preparing food would consist in the increase of the productive force of the community, so that the provision for dwelling might be increased both absolutely and relatively. I might add another treatise to this, on the waste of force in bad building, and from the common practice of what I have named the art of combustible architecture; but time will not serve.

Suffice it that the product of this nation is more than ample for the abundant subsistence, the adequate shelter, and the complete clothing of every family in it; yet we witness want in the midst of plenty, because we waste enough to support another nation at the standard of French economy and thrift, especially in the matter of food.

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#### LA GRIPPE, OR INFLUENZA.

BY J. W. REDDEN, M.D., OF TOPEKA,

Secretary of the Kansas State Board of Health.

La grippe, or influenza, is a catarrhal affection, is epidemic, and is characterized by a congestion of the mucous membrane of the nose, pharyngeal and laryngeal bronchæ, with feverish action more or less pronounced, accompanied by a heaviness of the head and painful inflammation of the limbs, and general fever. It generally announces itself by a chill more or less intense, by pains in the limbs, by a general debility and lassitude, an extraordinary heaviness of the head, and a feeling of intense weakness. The succeeding symptoms are those of chills, especially of ordinary bronchitis. The symptoms of the grippe are numerous and various, but there exists between them a sort of kinship. They attack especially the mucous membrane, the nervous system, the circulation, and the secretive organs. The digestive organs are the seat of troubles which, by their frequency, can be considered as one of the principal elements of the grippe. These consist of nausea, bilious vomiting, lack of appetite, and diarrhea or constipation.

Many distinct kinds of la grippe have been established, generally classified as inflammatory, bilious, and nervous. Some have admitted a form affecting the head, chest, and abdomen. There is also described a grippe producing convulsions, syncope, delirium, paralysis, and rheumatism. These are evidently coincidences, which have served as a basis for classification. It is better to divide la grippe into mild and intense. This includes all coincidences and complications which modify its various forms.

La grippe is a sickness necessarily epidemic; this fact is universally recognized. With this character, it has often overrun widely-separated parts of the globe. There were no less than twenty-one distinct epidemics of this disease between 1685 and 1870, which have overrun all Europe, Asia, and America. Cold and moist conditions have generally preceded the appearance of the grippe. Sometimes the cold has been of remarkable intensity; at other times there has been extraordinary moisture, and rains of more than usual duration and violence. When the cold and the moisture succeed a warm and dry condition, the effects seem to be intensified. The grippe has appeared sometimes after the opposite conditions—that is to say, after an autumn dry and hot preceded by a summer chilly and moist. Sudden changes of temperature determine the immediate development of the grippe, and it seems to depend upon repeated and continual variations of climate. These diverse atmospheric conditions prove that cold and moisture seem to have exerted the most powerful influence; but this influence has not been constant, since the grippe has sprung into existence under opposite conditions. It is, then, impossible to consider any definite atmospheric conditions as the cause of the epidemic. It is necessary to examine into the ozonometric condition of the atmosphere in times of epidemics.

Epidemics of the grippe attack all ranks of society; but the individuals who by their profession are most habitually out of doors are invariably the first attacked, and the disease is with them more intense. This influence seems most positive, since whole families have been preserved from the disease by shunning the outside air. Physicians in London observed, in 1782, that la grippe attacked rather those who slept in close rooms than those who exposed themselves to the circulation of the outer air. Individuals who already have lung trouble, and who keep themselves confined to their rooms or houses on this account, have succumbed most swiftly to the reigning influence. This shows, on the contrary, that the catarrhal influence penetrates the best-defended places.

It would seem from past records that the atmospheric condition is one of suddenly-increased temperature. Thus, in 1782 the thermometer rose 30° in one night in St. Petersburg, and next morning 40,000 people were laid low with influenza. Recently we have experienced an equally sudden wave of warm weather.

There are various complications; and if the attack is severe, it is very hard upon old and weakly people, especially if the bronchial trouble is acute. In such cases there is a sudden and unaccountable loss of strength, which is liable to carry off the sufferer. It is this loss of strength which makes two days of the acute symptoms of influenza as bad as a fortnight of some other febrile and bronchial affection; and herein lies the danger, for patients are apt to underestimate the complaint, and too sudden exposure brings on other chest troubles. Whenever influenza attacks anyone, he should take to bed without delay.

As the epidemic of 1847 in Europe and America was followed in 1848 by



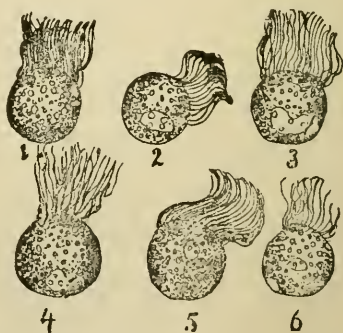
a virulent outbreak of cholera in both countries, the wisest and most rigid sanitary measures should be adopted in all the infected territory to prevent a possible outbreak of a more malignant epidemic of disease following in the track of the present one. I am inclined to think that the prevalence of the present epidemic menaces the public health to a more serious extent than the general public is willing to admit.

It is wise, therefore, to guard against this threatened danger, and to exercise all proper precautionary measures; to be temperate and regular in our habits; to protect ourselves against all sudden changes in temperature; avoid undue exposure or strains; to live according to the best sanitary rules and regulations, to the end that much sickness and suffering may be prevented, and many valuable lives saved to families, communities, and the State.

We lay before our readers the following article, entire and illustrated as it is, from the pen of Dr. J. H. Salisbury. It was published in 1873 in the most prominent journal of microscopy in the world, Dr. Hallier's *Zeitschrift für Parasitenkunde*, at Jena, Prussia. In an exhaustive English work, Kent's *Manual of the Infusoria*, printed in 1882, in London, this discovery of Dr. Salisbury was duly recognized and confirmed. The treatment producing the most satisfactory results, being germicidal, would also indicate that the disease was dependent upon the presence of pathogenic bacteria. We believe no other theory will satisfactorily explain the rapidity with which it travels, the simultaneousness with which it attacks large numbers of people, and the great areas of country of different climatic and thermometric conditions affected by it. Dr. Salisbury's article is as follows:

Infusorial catarrh is purely a parasitic disease, arising from a peculiar animal-cellular organism armed upon one side with cilia. This organism assumes a great variety of shapes and sizes. By watching its development and metamorphoses

under the microscope it may be seen to transform itself into all the different forms represented in the figures from 1 to 17. The most usual shapes appear to be either spherical or oval, as seen in figures 1 to 8. Each frequently sends out a proboscis, at the end of which is a dilated and elongated cilium, as represented at 14, 15, 16 and 17. This proboscis may be in the center of the mass of cilia, as at 15 or 16, or at one side as at 14 and 17. It may be drawn in, leaving a nipple-like elevation as at 10, or may disappear entirely, leaving the organism oval (8) or spherical (6). The proboscis often only partially disappears, or is only partially drawn in, while a constriction occurs in the form, as represented at 13 and 14. It may be simply a largely dilated cilium as at 17 and 18, or the cell walls may go out, forming a more or less sharp protuberance, as at 15; or the walls may go still further out, forming a more or less fusiform organism, as at 16.



The young are developed within the parent cell, and when mature are discharged



at the end of organism opposite the cilia, as seen at figure 18. The parent becomes quite dilated before delivering; and as the young one is discharged the parent cell becomes shrunken and shriveled for a time.

The aperture soon, however, closes, the wrinkled, shriveled condition of the sac walls disappears, and the parent moves again, fresh, plump, and lively as ever. The cilia are in active motion during the greater part of the life existence of the animal, and produce a most aggravating irritation of the mucous surfaces.

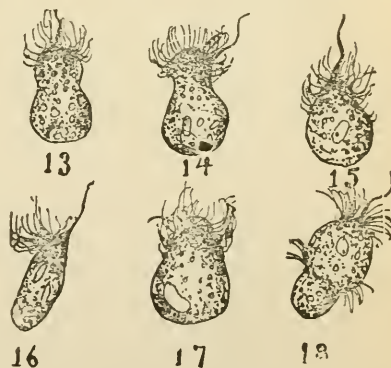
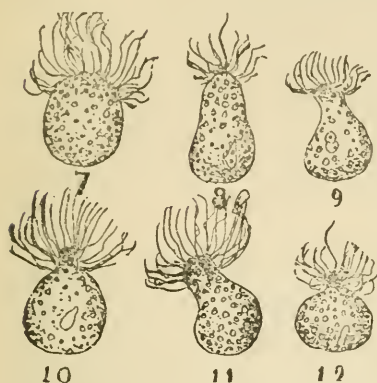
The young organisms—1, 2, 3, 4, 5, and 6—have a rolling, rocking, vibrating motion from side to side, making about one-third of the revolution on the transverse axis at each oscillation. The more mature cells either vibrate slightly or have a tremulous motion,

their cilia not moving altogether as at 5, but vibrating in different directions.

**ASTHMATOS CILIARIS (SALISBURY).**—I have taken the liberty to give this little parasite a name, which perhaps more extended acquaintance may deprive it of. It may be found to be one of the many forms that are already described that inhabit stagnant and running waters, and under certain conditions fermenting organic matter. The figures from 1 to 18 represent the different phases of its existence. They are magnified from 300 to 500 diameters. In figures 7, 8, 14, 15, 16 and 17 are seen the young cell developing inside the parent cell.

**SYMPTOMS.**—After once obtaining a foothold on the mucous surfaces of the air passages, they multiply rapidly. At first they attack the mucous surfaces of the eye and nose, causing free secretion of tears and thin mucus, and often intense paroxysms of sneezing. The organisms gradually travel from the nasal surface down into the fauces, larynx, trachea, and larger and smaller bronchii. As soon as they reach the fauces there is a burning heat and irritation in the parts, that excites severe coughing. This tendency to cough constantly increases as they and the irritation gradually travel farther and farther down the air passages. When the larger bronchii are reached, a heavy, hot, feverish pain is felt in the parts they invade, accompanied by flushes of heat and fever.

This stage is accompanied by most intense paroxysms of coughing, which are frequently long and most painful, especially in the morning. If the parasite makes its way into the smaller bronchii and air cells, asthmatic symptoms of a distressing character often supervene. The disease may continue according to the temperament and constitution and state of health of the patient; the irritation assumes a chronic form, and the sufferings gradually grow less and less till they disappear. In irritable, sensitive constitutions, the irritation in the fauces, larynx, pharynx and bronchii becomes so great that the parts spasmodically close in attempts to swallow or to inhale air charged with anything which excites inflamed parts. I have no doubt from what I have seen that death may have occasionally occurred in the acute stage of this disease, from spasms of the pharynx and epiglottis.



**SECRETION.**—The cells of the mucus, first secreted from the surface invaded, are large, round mucous cells, not differing materially from those in health. Soon, however, they begin to be shrunken and jagged, and in a few days they assume—many of them—the appearance and characters of pus cells (mucopus). The secretion is thin, clear and watery at first, and small in quantity; soon becoming thicker and more turbid. The cough is short and somewhat painful, and the invaded surfaces feel irritated, raw and hot. The cough raises but a small quantity at each time, and relieves the irritation and itching but for a few moments. Whenever the parasites are developing rapidly on the *velum palati* most intense paroxysms of coughing are excited, which are long and persistent and painful, and sometimes are accompanied by severe spasms of the *epiglottis*.

Often an irritation and itching will be felt on one side of the throat only—exciting constant desire to cough. In such cases the irritation will always be on the side on which the nasal passage is closed. Under such circumstances, inhaling remedies through the mouth very often fails to check the coughing more than a few moments. By clearing the closed-up nasal passage and inhaling through it, the coughing and irritation are soon checked. The reason of this is that the parasites are developing rapidly on the posterior surface of the wing of the palate on the side of the nasal stoppage, and are constantly working down into the larynx and pharynx on that side.

**ASTHMATIC SYMPTOMS.**—When the parasites reach the smaller bronchii and air cells—especially in irritable and sensitive constitutions—asthmatic symptoms begin to show themselves, and often become distressing and almost unendurable. Any excitement in the circulation aggravates the symptoms. The evening and night air always increase the sufferings.

**CONTAGION.**—This disease belongs to those that may be transmitted from one individual to another, though the transmission is not very readily accomplished. In working very closely over about sixty cases of the disease, examining the sputa under the microscope for many hours together in each instance, and in several severe attacks devoting days to the examinations, I have taken the disease but six times myself, and in two instances have transmitted it to my family. I have usually begun to feel symptoms of the presence of the parasite in from four to eight days after beginning to treat a case. In all my late cases I should state that I have taken the precaution to inhale a solution of crystallized carbolic acid, one drachm to the pint of water, every two or three hours, and to take twenty drops tincture ferri chlorid in a tumbler of water two hours after each meal. This course has lately protected me from taking the disease.

**TREATMENT.**—All means ordinarily used for colds and coughs are worse than useless in this disease. While they tend to get the system out of order they do not retard the development and progress of the cause. The only remedies that do any good are such as either destroy or retard the growth and reproductiveness of the parasites.

Fortunately we have many agents belonging to this class, among which are carbolic acid, tinct. ferri-chlorid, quinia sulph., sulphuric acid, nitric acid, hydro-chloric acid, etc., all of which remedies should be in solution with sufficient water, so that they can be inhaled without producing irritation. The inhalations should be made freely, and as often as every hour or two. In addition to inhaling, give two grains of quinia sulph. every four hours, and twenty drops tinct. ferri-chlorid in a glass of water morning, noon, and night. It is surprising how much a single inhalation will relieve the suffering patient. If the sputa are examined before the first inhalation and then again after it, a remarkable difference will be observed in the condition of

the parasites. Before inhalation they are all in active motion; after it, if thoroughly done, they will nearly all be found dead or motionless.

By inhaling at short intervals and thoroughly, one leaves no chance for the parasites to get very numerous; and soon the follicles become permeated with the inhaled materials, and the cause is entirely destroyed.

Dr. Salisbury, when interviewed in regard to the present epidemic, and being asked if he had any occasion to change the views expressed in his article above quoted, or had anything additional to suggest by way of prevention, said:

"No more than a recommendation to inhale menthol and camphor. Both are destructive to the life of the animalcule, the former particularly so. If attacked promptly, the living organisms can all be killed off within twenty-four hours, though more are likely to be reproduced from germs for three or four days, and the disease will reëstablish itself if the treatment is not kept up for that length of time. If allowed to run its course without treatment, the disease will last about a month. By the end of that time these infusorial organisms will have so poisoned the secretions and the surfaces of the tissues they infest that they can no longer live in them, and the disease will 'get well of itself.'

"Until then the affected person spreads them abroad for the infection of others, not simply in the secretions discharged from his nose and throat, but by his breath. I have a great many cases of the disease to treat, and would catch it every day of my life if I did not constantly employ preventive measures, the principal of which is the inhalation of menthol. As it is, I do not have it more than two or three times a year, and then, of course, put a stop to it very quickly. It is not at all dangerous, and is easy to cure if properly treated."

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#### METEOROLOGICAL.

Below will be found very thorough and instructive monthly weather reports for the year 1889, followed by a meteorological summary. All of these were prepared by Prof. F. H. Snow, of the University of Kansas, from observations taken at Lawrence, and are furnished by him for publication in this report. Anyone will be well repaid to examine and study them carefully and thoroughly.

#### REPORT FOR JANUARY.

The warmest January since 1882. There have been five warmer Januaries on our 22 years' record—in 1869, 1876, 1878, 1880, and 1882. The rainfall was about two-thirds the average; the amount of sunshine was greater than in any January since 1868; the wind-velocity was nearly normal.

MEAN TEMPERATURE—30.31 degrees, which is 5.49 deg. above the January average. The highest temperature was 49 deg., on the 25th; the lowest was 7 deg., on the 28th, giving a range of 42 deg. Mean temperature at 7 A. M., 24.58 deg.; at 2 P. M., 36.53 deg.; at 9 P. M., 30.06 deg.

RAINFALL—including melted sleet—0.79 inch, which is 0.47 inch below the January average. Rain and sleet, in measurable quantities, fell on 2 days. There were no thunder showers. There were snow flurries on 3 days, but in case was the ground fairly whitened.

MEAN CLOUDINESS—37.31 per cent. of the sky, the month being 11.19 per cent.



clearer than usual. Number of clear days (less than one-third cloudy), 20; half-clear (from one to two-thirds cloudy), 4; cloudy (more than two-thirds), 7. There were 8 entirely clear days and 7 entirely cloudy. Mean cloudiness at 7 A. M., 40.96 per cent.; at 2 P. M., 44.51 per cent.; at 9 P. M., 26.45 per cent.

WIND.—N. W. 38 times, S. W. 30 times, S. E. 11 times, N. E. 5 times, E. 4 times, N. 3 times, S. once, W. once. The total run of the wind was 11,620 miles, which is 160 miles below the January average. This gives a mean daily velocity of 375 miles, and a mean hourly velocity of 15.62 miles. The highest velocity was 65 miles an hour, on the 27th, from 5 to 6 P. M.

BAROMETER.—Mean for the month, 29.148 inches; at 7 A. M., 29.163 inches; at 2 P. M., 29.124 inches; at 9 P. M., 29.145 inches; maximum, 29.477 inches, on the 31st; minimum, 28.415 inches, on the 16th; monthly range, 1.062 inches.

RELATIVE HUMIDITY.—Mean for the month, 77.5; at 7 A. M., 84.8; at 2 P. M., 66.7; at 9 P. M., 80.9; greatest, 100, on 8 occasions; least, 38, on the 30th. There were 8 fogs.

The following table furnishes a comparison with the 21 preceding Januaries:

January.	Mean temperature...	Maximum temperature...	Minimum temperature...	Winter days.....	Zero days.....	Rain, inches.....	Snow, inches.....	Rainy days.....	Thunder storms..	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Maximum barometer.....	Minimum barometer.....
1868.....	23.47	64.0	-7.0	23	2	0.36	5.0	1	0	37.00	.....	0	.....	.....	.....	.....
1869.....	30.38	56.0	6.0	18	0	0.90	4.0	8	0	43.97	88.7	1	.....	29.101	29.390	28.616
1870.....	28.88	56.5	-1.0	20	1	0.67	3.0	6	0	49.25	74.2	1	.....	29.158	29.764	28.191
1871.....	28.57	67.5	-5.0	18	3	1.11	11.0	8	0	61.00	75.7	2	.....	29.199	29.726	28.665
1872.....	24.17	50.5	-7.5	22	4	0.17	1.0	1	0	42.69	68.3	1	.....	29.238	29.697	28.810
1873.....	18.23	46.5	-26.0	24	7	2.60	16.0	9	0	47.10	75.5	1	10,933	29.117	29.704	28.627
1874.....	27.77	61.0	-2.5	18	1	2.35	7.5	8	0	53.65	73.0	2	13,203	29.184	29.845	28.427
1875.....	15.42	46.5	-16.5	30	10	0.12	0.0	8	0	54.84	83.1	0	10,679	29.363	29.856	28.793
1876.....	34.70	65.5	2.0	13	0	0.57	0.0	6	0	42.17	68.4	1	14,135	29.176	29.665	28.527
1877.....	25.66	62.5	-9.0	25	3	1.17	8.0	8	0	48.82	75.5	1	9,178	29.255	29.751	28.563
1878.....	33.97	55.0	7.5	9	0	3.05	0.0	8	1	46.77	73.4	0	9,960	29.144	29.618	28.835
1879.....	23.49	53.0	-16.0	20	6	0.37	0.8	4	0	43.98	76.0	1	8,309	29.253	29.745	28.752
1880.....	41.23	67.0	20.5	4	0	1.80	0.0	3	0	48.49	73.8	9	12,861	29.094	29.631	28.604
1881.....	21.60	53.0	-8.0	26	4	0.34	0.5	6	0	58.60	75.9	1	12,192	29.255	29.722	28.713
1882.....	32.68	65.0	5.0	10	0	0.70	2.0	6	0	51.72	66.2	1	11,673	29.200	29.760	28.709
1883.....	19.65	47.0	-14.0	28	5	0.73	5.5	7	0	53.55	79.1	1	12,526	29.253	29.741	28.526
1884.....	20.99	57.0	-21.5	21	7	1.28	12.0	7	0	41.42	73.9	3	14,368	29.313	29.881	28.735
1885.....	18.74	55.5	-12.5	24	13	1.66	8.0	10	0	43.76	83.0	1	8,390	29.252	29.701	28.550
1886.....	14.32	41.5	-18.0	30	10	2.28	12.0	15	0	61.93	83.0	2	13,090	29.200	29.721	28.627
1887.....	20.48	55.0	-20.0	21	9	1.23	9.0	5	1	43.55	73.2	0	14,680	29.094	29.769	28.467
1888.....	17.70	54.0	-18.0	24	8	0.93	3.0	5	1	41.29	85.0	4	12,435	29.334	29.983	28.641
1889.....	30.31	49.0	-7.0	15	0	0.79	0.0	2	0	37.31	77.5	8	11,620	29.148	29.477	28.415
Mean.....	25.07	55.8	-7.0	20	4	1.22	4.9	7	0.1	47.99	76.1	2	11,780	29.200	29.721	28.609

#### REPORT FOR FEBRUARY.

For the first time in twenty-two years a cold February has followed a warm December and January. Only four preceding Februaries have been colder than this. The rainfall was nearly 50 per cent. above the average; the cloudiness was excessive, and the wind-velocity normal.

MEAN TEMPERATURE—27.56 degrees, which is 4.50 deg. below the February average. The highest temperature was 65 deg., on the 15th; the lowest was 3.5 deg., below zero on the 23d, giving a range of 68.5 deg. Mean temperature at 7 A. M., 21 deg.; at 2 P. M., 36.12 deg.; at 9 P. M., 26.55.

RAINFALL—including melted snow—2.20 inches, which is 0.92 inch above the February average. Rain or snow, in measurable quantities, fell on 6 days. There were 6 inches of snow.

MEAN CLOUDINESS—51.78 per cent. of the sky, the month being 4.82 per cent. cloudier than usual. Number of clear days (less than one-third cloudy), 9; half-clear

(from one- to two-thirds cloudy), 10; cloudy (more than two-thirds), 9. There were 6 entirely clear days and 7 entirely cloudy. Mean cloudiness at 7 A. M., 45.71 per cent.; at 2 P. M., 56.43 per cent.; at 9 P. M., 53.21 per cent.

WIND.—N. W. 31 times, S. W. 21 times, N. E. 19 times, E. 4 times, S. E. 3 times, W. 3 times, N. twice, S. once. The total run of the wind was 11,020 miles, which is 85 miles below the February average. This gives a mean daily velocity of 394 miles and a mean hourly velocity of 16.39 miles. The highest velocity was 48 miles an hour, on the 4th, from 3 to 4 P. M.

BAROMETER.—Mean for the month, 29.244 inches; at 7 A. M., 29.259 inches; at 2 P. M., 29.216 inches; at 9 P. M., 29.258 inches; maximum, 29.948 inches, on the 23d; minimum, 28.570 inches, on the 14th; monthly range, 1.378 inches.

RELATIVE HUMIDITY.—Mean for the month, 76.0; at 7 A. M., 87.0; at 2 P. M., 61.0; at 9 P. M., 80; greatest, 100, on 14 occasions; least, 33, on the 2d. There were 3 fogs.

The following table furnishes a comparison with the 21 preceding Februaries:

February.	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Winter days.....	Zero days.....	Rain— inches.....	Snow— inches.....	Foggy days.....	Thunder storms.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Maximum barometer.....	Minimum barometer.....
1868.....	35.30	72.0	-3.0	13	1	0.19	0.50	3	1	24.71	.....	0	.....	.....	.....	.....
1869.....	30.32	66.0	-5.0	15	1	1.44	5.25	6	1	51.20	83.1	4	.....	29.097	29.633	28.636
1870.....	34.88	69.0	-4.0	9	1	0.03	0.00	2	0	43.69	61.6	2	.....	29.047	29.572	28.337
1871.....	35.03	71.5	-6.0	9	1	2.43	4.00	8	2	49.85	74.3	3	.....	29.039	29.610	28.333
1872.....	30.08	62.0	-12.0	10	3	0.82	7.75	5	0	54.94	70.4	3	.....	29.048	29.588	28.419
1873.....	29.98	62.0	-6.5	13	2	0.86	3.00	3	1	45.95	68.1	1	12,827	29.102	29.727	28.575
1874.....	27.26	49.0	2.0	16	0	0.95	10.00	8	1	60.94	78.2	4	9,195	29.166	29.699	28.300
1875.....	21.92	55.0	-8.0	23	3	0.80	4.00	7	1	50.48	74.7	1	11,365	29.174	29.694	28.524
1876.....	37.80	74.5	-5.0	12	1	0.36	0.25	3	1	38.16	59.0	1	15,236	29.135	29.667	28.570
1877.....	39.65	66.0	21.0	1	0	0.80	2.00	5	0	47.13	71.2	2	7,718	29.301	29.621	28.826
1878.....	40.22	66.0	15.5	4	0	2.86	2.50	9	1	54.63	78.5	0	7,393	29.016	29.498	28.575
1879.....	34.06	74.0	5.0	9	0	0.41	4.50	2	0	39.04	64.7	0	10,097	29.199	29.621	28.609
1880.....	37.58	64.0	8.0	11	0	0.73	0.00	3	1	24.94	64.5	0	11,861	29.125	29.733	28.473
1881.....	25.78	61.5	-5.5	18	0	4.60	2.20	7	0	54.17	79.8	3	12,142	29.180	29.571	28.606
1882.....	41.65	73.0	12.0	4	0	1.66	2.00	6	0	45.49	69.7	3	11,907	29.110	29.441	28.531
1883.....	27.92	67.0	-13.0	13	3	2.31	4.00	9	1	51.67	77.9	2	10,593	29.340	29.869	28.492
1884.....	28.03	57.0	-1.0	16	1	1.13	2.00	8	1	54.33	72.3	1	11,742	29.158	29.148	28.587
1885.....	20.83	55.0	-14.5	20	7	1.12	11.00	7	0	47.86	75.1	0	10,907	29.148	29.562	28.556
1886.....	31.64	62.0	-7.0	10	3	0.56	1.00	7	1	42.38	73.6	2	11,170	29.166	29.725	28.482
1887.....	30.43	68.0	-5.5	16	3	1.58	6.00	11	1	57.86	82.6	4	11,815	29.205	29.792	28.152
1888.....	32.74	57.0	-1.0	12	1	1.27	2.00	7	0	50.68	78.2	6	12,250	29.143	29.851	28.621
1889.....	27.56	65.0	-3.5	13	4	2.20	6.00	6	0	51.78	76.0	3	11,020	29.244	29.948	28.570
Mean.....	31.86	64.3	-1.1	12	2	1.32	4.41	6	1	47.18	73.0	2	11,016	29.149	29.661	28.513

## REPORT FOR MARCH.

Only five Marches on our twenty-two years' record have been warmer than the month just closed. The rainfall was normal, the winds were of low velocity, and the sky was slightly cloudier than the average. White maples were in blossom on the 11th, dog-tooth violets on the 20th, and elms on the 22d. The weather has been highly favorable for the wheat crop. Peach buds are in fine condition.

MEAN TEMPERATURE—44.73 degrees, which is 3.26 deg. above the March average. The highest temperature was 71 deg., on the 14th; the lowest was 22 deg., on the 9th; giving a range of 49 deg. Mean temperature at 7 A. M., 38.12 deg.; at 2 P. M., 52.69 deg.; at 9 P. M., 44.05 deg.

RAINFALL—2.30 inches, which is 0.01 inch above the March average. Rain in measurable quantities fell on 7 days. Snow whitened the ground on the 27th. There were two thunder showers. The entire rainfall for the 3 months of 1889 now completed has been 5.29 inches, which is 0.46 inch above the average for the same months in the preceding 21 years.

MEAN CLOUDINESS—42.80 per cent. of the sky, the month being 1.45 per cent.



cloudier than usual. Number of clear days (less than one-third cloudy), 14; half-clear (from one to two-thirds cloudy), 11; cloudy (more than two-thirds), 6. There were 7 entirely clear days and 3 entirely cloudy. Mean cloudiness at 7 A.M., 50 per cent.; at 2 P.M., 49.68 per cent.; at 9 P.M., 28.71 per cent.

WIND.—N.W. 23 times, N.E. 20 times, S.E. 15 times, S.W. 11 times, S. 11 times, E. 6 times, N. 4 times, W. 3 times. The total run of the wind was 11,110 miles, which is 3,160 miles below the March average. This gives a mean daily velocity of 358.39 miles and a mean hourly velocity of 14.93 miles. The highest velocity was 47 miles an hour, on the 18th, from 2 to 3 P.M.

BAROMETER.—Mean for the month, 29.127 inches; at 7 A.M., 29.148 inches; at 2 P.M., 29.107 inches; at 9 P.M., 29.127 inches; maximum, 29.539 inches, on the 10th; minimum, 28.600 inches, on the 14th; monthly range, 0.939 inch.

RELATIVE HUMIDITY.—Mean for the month, 69.3; at 7 A.M., 79.1; at 2 P.M., 55.3; at 9 P.M., 73.7; greatest, 100, on 4 occasions; least, 18, on the 10th. There was 1 fog.

The following table furnishes a comparison with the 21 preceding Marches:

March.	Mean temperature...	Maximum temperature...	Minimum temperature...	Winds days...	Rain— inches...	Snow— inches...	Thunder days...	Thunder storms...	Mean cloudiness...	Humidity...	No. of fogs...	Miles of wind...	Mean barometer...	Maximum barometer...	Minimum barometer...
1868.....	51.15	93.0	22.0	1	3.46	0.00	4	0	51.13	.....	0	.....	29.146	29.684	28.507
1869.....	34.53	81.0	-1.0	9	1.15	1.00	4	0	32.81	75.4	3	.....	29.063	29.510	28.397
1870.....	37.25	71.0	1.0	8	1.86	0.00	7	3	56.13	64.0	0	.....	29.943	29.307	28.404
1871.....	47.10	78.0	25.5	0	1.73	4.00	6	3	52.00	60.4	0	.....	29.124	29.731	28.423
1872.....	36.79	72.0	18.0	9	2.92	3.50	6	4	55.06	63.8	0	.....	18.147	29.118	26.655
1873.....	42.33	74.0	4.0	5	1.34	2.00	5	1	41.93	52.8	0	.....	13.419	29.123	28.493
1874.....	39.13	69.5	19.0	4	2.30	4.00	7	1	62.27	67.1	1	.....	15.023	29.051	29.471
1875.....	37.10	82.0	9.5	13	2.61	1.00	7	1	44.84	64.9	0	.....	15.690	29.060	28.533
1876.....	34.25	66.0	0.0	11	4.51	17.0	11	0	60.45	69.4	1	.....	13.981	29.108	29.537
1877.....	40.03	81.0	7.0	6	3.40	5.00	0	2	54.09	56.2	1	.....	13.787	29.065	28.558
1878.....	50.90	81.0	27.0	0	2.67	0.00	8	1	40.36	67.6	0	.....	11.994	29.005	29.372
1879.....	48.22	87.0	11.0	7	0.37	0.00	5	0	46.02	56.1	0	.....	13.787	29.165	28.662
1880.....	42.38	79.0	2.5	6	2.03	3.00	5	2	44.94	63.4	1	.....	16.231	29.043	28.460
1881.....	37.47	77.0	14.0	6	1.66	8.00	7	1	45.79	70.3	0	.....	16.608	29.126	29.676
1882.....	46.90	79.0	17.0	3	1.62	9.00	5	1	40.22	64.9	0	.....	12.080	29.164	29.774
1883.....	40.90	69.0	16.0	3	1.28	0.00	7	1	48.92	65.6	0	.....	14.229	29.054	29.465
1884.....	41.56	73.0	12.0	7	2.48	1.00	9	5	58.87	65.0	2	.....	12.184	29.205	29.514
1885.....	40.55	73.0	15.0	6	0.87	4.00	5	0	40.61	65.8	0	.....	13.900	29.069	29.510
1886.....	40.40	79.0	11.0	6	1.63	4.00	10	1	55.05	67.7	0	.....	13,360	29.147	29.521
1887.....	43.41	81.0	22.0	3	2.75	6.00	8	2	38.50	63.8	2	.....	13,830	29.147	29.521
1888.....	38.63	75.0	14.0	12	5.47	2.00	10	4	53.87	73.0	0	.....	11,110	29.127	29.539
1889.....	44.73	71.0	22.0	2	2.30	0.00	7	2	42.80	69.3	1	.....	.....	.....	28.600
Mean.....	41.62	77.0	13.1	6	2.30	3.39	7	2	41.42	65.6	1	14,084	29.100	29.571	28.597

## REPORT FOR APRIL.

The month was warm and clear, with frequent rainfall, although the total precipitation was slightly below the average. A light frost on the 3d did no damage to peach buds. The wind-velocity was below the normal. A few snow flakes appeared on the 5th. The weather throughout the month was highly favorable to crops.

MEAN TEMPERATURE—56.37 degrees, which is 2.19 deg. above the April average. The highest temperature was 86 deg., on the 2d; the lowest was 35 deg., on the 4th, giving a range of 51 deg. Mean temperature at 7 A.M., 50.46 deg.; at 2 P.M., 64.69 deg.; at 9 P.M., 55.18 deg.

RAINFALL—2.52 inches, which is 0.65 inch below the April average. Rain in measurable quantities fell on 8 days. There were five thunder showers. The entire rainfall for the 4 months of 1889 now completed has been 7.81 inches, which is 0.19 inch below the average for the same months in the preceding 21 years.

MEAN CLOUDINESS—44.16 per cent. of the sky, the month being 3.90 per cent. clearer than usual. Number of clear days (less than one-third cloudy), 14; half-clear

(from one to two-thirds cloudy), 7; cloudy (more than two-thirds), 9. There were 8 entirely clear days and 6 entirely cloudy. Mean cloudiness at 7 A. M., 49.50 per cent.; at 2 P. M., 44.33 per cent.; at 9 P. M., 38.66 per cent.

WIND.—N. W. 27 times, N. E. 18 times, S. E. 14 times, S. W. 13 times, E. 8 times, S. 5 times, N. 4 times, W. once. The total run of the wind was 11,550 miles, which is 2,359 miles below the April average. This gives a mean daily velocity of 385 miles and a mean hourly velocity of 16.04 miles. The highest velocity was 50 miles an hour, on the 2d, from 2 to 3 P. M.

BAROMETER.—Mean for the month, 29.095 inches; at 7 A. M., 29.127 inches; at 2 P. M., 29.075 inches; at 9 P. M., 29.083 inches; maximum, 29.496 inches, on the 21st; minimum, 28.551 inches, on the 11th; monthly range, 0.945 inch.

RELATIVE HUMIDITY.—Mean for the month, 69.3; at 7 A. M., 67.1; at 2 P. M., 46.7; at 9 P. M., 69.3; greatest, 100, on the 10th; least, 15, on the 27th. There was no fog.

The following table furnishes a comparison with the 21 preceding Aprils:

April.	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Rain, inches.....	Snow, inches.....	Wet days.....	Thunder storms.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Maximum barometer.....	Minimum barometer.....
1863.....	49.14	83.0	25.0	2.95	0.00	10	3	52.00	.....	1	.....	.....	.....	.....
1869.....	50.97	87.0	18.0	2.43	1.00	10	2	51.00	75.1	0	.....	29.006	29.407	28.388
1870.....	56.20	91.0	19.0	1.08	0.00	8	1	49.33	54.7	1	.....	29.081	29.359	28.700
1871.....	57.30	92.0	30.5	2.38	0.00	8	3	47.11	53.5	0	.....	28.801	29.331	28.299
1872.....	55.92	85.0	30.0	4.74	0.00	12	7	55.12	56.5	1	.....	28.999	29.443	28.401
1873.....	48.71	88.0	26.0	4.42	2.00	9	2	55.89	63.4	0	8,371	28.957	29.349	28.533
1874.....	47.69	83.0	22.5	2.86	0.00	8	2	51.11	57.7	0	14,784	29.100	29.422	28.653
1875.....	49.70	82.0	23.0	2.54	0.00	10	2	48.22	57.6	0	14,144	29.075	29.395	28.676
1876.....	55.60	87.5	30.0	3.38	0.00	7	5	44.78	56.6	0	14,442	29.035	29.418	28.684
1877.....	53.90	81.0	25.0	3.13	0.00	11	4	53.00	74.9	1	11,970	28.995	29.537	28.364
1878.....	53.60	82.0	36.0	5.48	0.00	7	5	38.22	66.0	1	11,482	28.851	29.242	28.335
1879.....	56.40	84.0	20.0	4.18	0.00	10	6	49.67	61.0	0	11,231	29.062	29.467	28.684
1880.....	56.92	93.0	31.0	1.75	0.00	6	4	34.56	53.4	0	16,709	29.029	29.550	28.303
1881.....	52.47	81.0	13.0	1.27	0.00	9	4	51.75	67.6	0	14,495	29.084	29.501	28.622
1882.....	56.83	88.0	35.0	3.20	0.00	9	5	51.77	61.7	0	14,226	29.032	29.484	28.542
1883.....	57.18	89.5	35.0	2.12	0.00	8	2	40.11	53.3	2	12,936	28.957	29.473	28.289
1884.....	50.42	76.5	28.5	5.62	6.00	13	4	55.76	65.9	1	13,954	29.002	29.321	28.495
1885.....	53.88	75.0	30.0	5.72	0.00	11	6	59.33	68.8	0	13,672	29.042	29.459	28.641
1886.....	54.80	85.0	19.0	1.38	4.00	12	2	52.66	65.1	1	13,040	29.053	29.427	28.640
1887.....	57.66	87.0	25.0	3.33	0.00	7	2	30.78	61.1	0	13,232	29.014	29.437	28.601
1888.....	57.55	88.0	31.0	2.53	0.00	5	1	37.00	61.8	0	12,860	29.172	29.658	28.593
1889.....	56.37	86.0	35.0	2.52	0.00	8	5	44.16	69.3	0	11,550	29.095	29.496	28.551
Mean,	54.28	85.2	26.8	3.13	0.60	9	4	47.88	68.9	1	13,770	29.025	29.434	28.526

## REPORT FOR MAY.

A cool May, with harmless hoar-frosts on the 2d and 3d, and remarkably low temperatures on the last eight days of the month. The rainfall was excessive, surpassing that of any previous May on our record.

MEAN TEMPERATURE—64.23 degrees, which is 1.08 deg. below the May average. The highest temperature was 89 deg., on the 23d; the lowest was 38 deg., on the 2d, giving a range of 51 deg. Mean temperature at 7 A. M., 59.67 deg.; at 2 P. M., 71.87 deg.; at 9 P. M., 62.70 deg.

RAINFALL—8.27 inches, which is 4.22 inches above the May average. Rain, in measurable quantities, fell on 14 days. There were 8 thunder showers and 3 light hail storms. The entire rainfall for the five months of 1889 now completed has been 16.08 inches, which is 4.03 inches above the average for the same months in the preceding 21 years.

MEAN CLOUDINESS—48.47 per cent. of the sky, the month being 1.10 per cent. clearer than usual. Number of clear days (less than one-third cloudy), 13; half-

clear (from one to two-thirds cloudy), 11; cloudy (more than two-thirds), 7. There was 1 entirely clear day, and there were 3 entirely cloudy days. Mean cloudiness at 7 A. M., 48.06 per cent.; at 2 P. M., 57.74 per cent.; at 9 P. M., 39.61 per cent.

WIND.—N. W. 22 times, S. W. 18 times, S. E. 16 times, N. E. 15 times, S. 14 times, N. 4 times, W. twice, E. twice. The total run of the wind was 13,380 miles, which is 1,681 miles above the May average. This gives a mean daily velocity of 431.61 miles, and a mean hourly velocity of 17.98 miles. The highest velocity was 78 miles an hour, on the 19th, at 6:30 P. M.

BAROMETER.—Mean for the month, 29.020 inches; at 7 A. M., 29.037 inches; at 2 P. M., 29.013 inches; at 9 P. M., 29.009 inches; maximum, 29.394 inches, on the 2d; minimum, 28.617 inches, on the 7th; monthly range, 0.777 inch.

RELATIVE HUMIDITY.—Mean for the month, 64.2; at 7 A. M., 73.4; at 2 P. M., 55.4; at 9 P. M., 78.0; greatest, 100, on the 17th and 23d; least, 18, on the 1st. There was no fog.

The following table furnishes a comparison with the 21 preceding Mays:

May.	Mean temperature.....	Minimum temperature.....	Maximum temperature.....	Hot days.....	Rain— <i>inches</i> .....	Rainy days.....	Thunder storms.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Minimum barometer.....	Maximum barometer.....
1868.....	65.90	84.0	49.0	0	2.81	5	1	29.62	.....	0	.....	.....	.....	.....
1869.....	61.74	88.0	35.0	0	3.64	12	6	46.01	72.6	0	.....	28.974	29.336	28.681
1870.....	67.01	90.0	44.0	1	2.46	7	3	43.87	60.5	0	.....	29.005	29.267	28.589
1871.....	65.87	92.0	37.0	1	2.79	8	2	45.70	64.7	0	.....	29.030	29.407	28.695
1872.....	65.33	88.0	39.0	0	5.72	14	6	55.27	65.1	0	.....	29.051	29.428	28.778
1873.....	63.95	88.5	46.0	0	7.12	11	4	55.81	68.7	0	12,880	28.947	29.291	28.621
1874.....	68.89	95.0	45.0	4	1.41	6	0	44.94	55.6	0	12,705	29.027	29.278	28.386
1875.....	65.00	95.0	30.0	1	3.39	11	3	45.00	60.3	1	12,439	29.006	29.391	28.344
1876.....	65.00	89.0	39.0	0	6.75	11	5	53.44	64.5	0	13,321	29.030	29.393	28.574
1877.....	64.50	85.0	37.0	0	6.45	17	6	62.93	72.0	0	11,522	29.015	29.264	28.657
1878.....	62.60	85.0	38.5	0	5.66	16	9	52.90	70.9	0	12,257	29.002	29.397	28.643
1879.....	69.50	93.0	43.0	5	1.60	4	3	37.20	60.9	0	12,057	29.024	29.339	28.773
1880.....	70.59	95.0	52.0	7	4.11	8	6	40.43	62.6	0	14,108	29.019	29.350	28.688
1881.....	69.86	88.5	48.0	0	3.51	17	4	64.04	72.5	2	8,868	29.038	29.334	28.663
1882.....	60.27	90.0	36.5	1	3.53	10	2	63.44	66.4	1	13,010	29.024	29.372	28.564
1883.....	62.05	91.0	39.0	1	7.63	10	5	47.63	64.5	0	15,661	29.010	29.355	28.496
1884.....	62.24	85.0	36.0	0	3.57	12	2	50.54	68.9	2	9,975	29.046	29.299	28.689
1885.....	62.79	86.0	35.0	0	4.07	11	6	34.07	68.3	1	9,280	29.024	29.340	28.677
1886.....	68.50	91.0	44.0	2	5.72	9	6	34.52	67.9	0	7,920	29.024	29.322	28.820
1887.....	67.88	91.5	45.5	1	1.12	7	3	40.32	70.4	1	10,270	29.041	29.407	28.500
1888.....	62.08	83.0	38.0	0	1.97	8	5	47.09	65.3	0	10,956	28.958	29.302	28.621
1889.....	64.23	89.0	38.0	0	8.27	14	8	48.47	68.9	0	13,380	29.020	29.394	28.617
Mean.....	65.26	89.2	40.7	1	4.24	10	4	47.42	66.4	0	11,798	29.015	29.345	28.612

#### REPORT FOR JUNE.

The most conspicuous feature of the month was the low temperature, which has been surpassed on only three Junes of our 22 years' record (1869, 1876 and 1884). The rainfall was abundant, although somewhat below the average. The wind-velocity was very low, and the skies were clearer than usual, although for the first time in our experience there was not a single day entirely free from clouds.

MEAN TEMPERATURE—71.24 degrees, which is 2.07 deg. below the June average. The highest temperature was 90 deg., on the 20th; the lowest was 51.5 deg., on the 11th, giving a range of 39.5 deg. Mean temperature at 7 A. M., 67.28 deg.; at 2 P. M., 78.87 deg.; at 9 P. M., 69.42 deg.

RAINFALL—4.04 inches, which is 0.90 inch below the June average. Rain, in measurable quantities, fell on 7 days. There were 7 thunder showers. The entire rainfall for the 6 months of 1839 now completed has been 20.12 inches, which is 3.13 inches above the average for the same months in the preceding 21 years.

MEAN CLOUDINESS—39.56 per cent. of the sky, the month being 2.12 per cent.



clearer than usual. Number of clear days (less than one-third cloudy), 18; half-clear (from one to two-thirds cloudy), 5; cloudy (more than two thirds), 7. There were no entirely clear days and 2 entirely cloudy. Mean cloudiness at 7 A. M., 34 per cent.; at 2 P. M., 57.50 per cent.; at 9 P. M., 27.17 per cent.

WIND.—S. W. 27 times, S. E. 22 times, S. 14 times, N. W. 12 times, N. E. 7 times, N. 3 times, E. 3 times, W. twice. The total run of the wind was 6,860 miles, which is 3,116 miles below the June average. This gives a mean daily velocity of 228.67 miles and a mean hourly velocity of 9.53 miles. The highest velocity was 30 miles an hour, on the 20th.

BAROMETER.—Mean for the month, 29.061 inches; at 7 A. M., 29.080 inches; at 2 P. M., 29.052 inches; at 9 P. M., 29.050 inches; maximum, 29.401 inches, on the 22d; minimum, 28.664 inches, on the 7th; monthly range, 0.737 inch.

RELATIVE HUMIDITY.—Mean for the month, 73.3; at 7 A. M., 79.5; at 2 P. M., 59.5; at 9 P. M., 80.8; greatest, 97, on the 14th; least, 41, on the 21st. There were two fogs.

The following table furnishes a comparison with the 21 preceding Junes:

June.	Mean temperature...	Maximum temperature...	Minimum temperature...	Hot days.....	Rain inches...	Rainy days.....	Thunder storms...	Mean cloudiness...	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Maximum barometer...	Minimum barometer.....
1868.....	74.15	99.0	57.0	11	3.80	6	3	41.71	.....	0	.....	.....	.....	.....
1869.....	68.80	90.0	37.0	1	7.57	15	10	56.74	77.0	1	.....	29.075	29.355	28.735
1870.....	72.59	102.0	44.0	12	1.88	13	6	39.44	68.0	1	.....	29.082	29.265	28.829
1871.....	75.87	96.0	53.0	12	4.06	10	5	46.33	66.9	0	.....	29.038	29.197	28.857
1872.....	76.14	97.0	53.0	14	1.30	14	6	35.33	61.4	0	.....	29.040	29.426	28.633
1873.....	75.89	97.0	58.0	9	2.96	11	3	41.66	68.0	0	9,445	29.033	29.234	28.770
1874.....	76.50	95.0	53.5	9	3.58	7	3	34.70	66.0	0	10,241	29.027	29.246	28.718
1875.....	75.47	99.0	49.0	13	3.45	7	3	31.44	60.2	0	12,887	29.028	29.336	28.598
1876.....	70.24	98.0	50.0	8	12.11	11	4	68.60	68.6	0	12,371	29.010	29.251	28.733
1877.....	72.03	95.0	47.0	4	7.20	14	9	38.78	75.3	0	8,741	29.011	29.201	28.683
1878.....	69.79	89.0	50.0	0	5.67	10	6	48.66	74.8	0	9,187	29.032	29.294	28.787
1879.....	73.22	97.0	45.0	12	7.14	10	9	41.33	69.9	0	9,498	29.040	29.417	28.675
1880.....	73.57	96.0	50.5	8	4.10	9	5	37.44	68.1	0	12,629	29.041	29.351	28.538
1881.....	77.25	97.0	62.5	14	4.52	13	10	31.89	70.1	0	11,474	28.969	29.186	28.707
1882.....	74.14	99.0	44.5	11	4.72	11	5	38.99	69.9	0	10,874	28.992	29.358	28.607
1883.....	71.38	94.0	48.5	6	7.73	14	7	38.56	74.3	0	10,737	29.028	29.217	28.671
1884.....	71.07	92.0	48.0	2	3.81	12	7	38.78	71.8	1	6,806	29.065	29.270	28.831
1885.....	72.57	92.0	51.0	3	2.39	12	5	47.30	72.3	0	9,883	29.066	29.316	28.749
1886.....	71.85	92.0	49.0	3	3.71	12	3	38.00	68.4	0	6,372	29.052	29.437	28.804
1887.....	73.89	96.0	51.0	5	3.77	8	2	34.33	73.1	0	8,170	29.043	29.280	28.850
1888.....	73.10	94.0	52.0	6	8.31	12	11	45.22	70.2	0	10,380	28.976	29.269	28.713
1889.....	71.24	90.0	51.5	1	4.04	7	7	39.56	73.3	2	6,860	29.061	29.401	28.664
Mean.....	73.22	95.2	50.2	8	4.90	11	6	41.59	69.9	0	9,793	29.034	29.301	28.723

## REPORT FOR JULY.

Only four Julys of the past twenty-two years have been cooler than this (in 1869, 1880, 1882, and 1887). The rainfall was 1.99 inches above the average. The wind velocity was below the average. Pronounced haze reddened the face of the sun on seven days.

MEAN TEMPERATURE—76.00 degrees, which is 1.97 deg. below the July average. The highest temperature was 94 deg., on the 8th; the lowest was 56 deg., on the 4th, giving a range of 38 deg. The mercury reached 90 deg. 6 times. Mean temperature at 7 A. M., 71.35 deg.; at 2 P. M., 84.32 deg.; at 9 P. M., 74.16 deg.

RAINFALL—6.34 inches, which is 1.99 inches above the July average. Rain in measurable quantities fell on 10 days. There were five thunder showers. The entire rainfall for the 7 months of 1889 now completed has been 26.46 inches, which is 5.24 inches above the average for the same months in the preceding 21 years.

MEAN CLOUDINESS—45.40 per cent. of the sky, the month being 7.99 per cent. cloudier than usual. Number of clear days (less than one-third cloudy), 12; half-clear

(from one to two-thirds cloudy), 8; cloudy (more than two-thirds), 11. There were 3 entirely clear days, and 2 entirely cloudy. Mean cloudiness at 7 A.M., 51.93 per cent.; at 2 P.M., 48.89 per cent.; at 9 P.M., 34.84 per cent.

WIND.—N.W. 22 times, N.E. 18 times, S.W. 17 times, S.E. 16 times, S. 10 times, E. 3 times, W. twice, N. once. The total run of the wind was 7,070 miles, which is 1,344 miles below the July average. This gives a mean daily velocity of 228 miles, and a mean hourly velocity of 9.7 miles. The highest velocity was 35 miles an hour, on the 22d.

BAROMETER.—Mean for the month, 29.052 inches; at 7 A.M., 29.072 inches; at 2 P.M., 29.042 inches; at 9 P.M., 29.043 inches; maximum, 29.264 inches, on the 30th; minimum, 28.845 inches, on the 18th; monthly range, .419 inch.

RELATIVE HUMIDITY.—Mean for the month, 75.5; at 7 A.M., 83.1; at 2 P.M., 63.5; at 9 P.M., 79.8; greatest, 100, on the 23d and 24th; least, 52, on the 30th. There were no fogs.

The following table furnishes a comparison with the 21 preceding Julys:

July.	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Hot days.....	Rainy inches.....	Thunder days.....	Thunder storms.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Maximum barometer.....	Minimum barometer.....
1868.....	85.08	101.0	70.0	26	4.05	4	4	45.96	.....	0	.....	.....	.....	.....
1869.....	74.25	93.0	47.0	6	5.05	11	7	53.33	84.5	2	.....	29.037	29.284	28.777
1870.....	79.22	99.0	55.0	22	5.58	12	4	30.64	64.2	2	.....	29.058	29.252	28.813
1871.....	79.14	103.0	60.0	17	7.39	13	6	49.79	.....	0	.....	.....	.....	.....
1872.....	77.11	93.5	61.5	11	6.50	13	9	50.85	75.2	2	9,203	29.061	29.283	28.772
1873.....	76.95	97.0	62.5	12	2.38	6	2	30.54	64.3	1	9,952	29.083	29.253	28.699
1874.....	83.16	103.0	68.0	21	1.19	5	4	26.83	52.1	0	10,904	29.079	29.256	28.765
1875.....	76.63	97.5	65.0	8	6.60	13	5	54.30	73.0	0	8,458	29.070	29.383	28.877
1876.....	78.60	95.0	60.0	12	3.51	6	3	30.48	72.7	0	8,901	29.075	29.268	28.817
1877.....	75.13	99.0	54.0	8	5.76	11	8	32.04	73.4	0	8,355	29.091	29.355	28.865
1878.....	78.40	98.0	58.0	15	4.30	7	4	31.29	78.2	0	7,974	29.073	29.265	28.739
1879.....	79.14	97.5	62.5	16	3.66	9	4	34.90	73.8	1	6,980	29.040	29.219	28.884
1880.....	75.75	98.0	54.0	13	2.34	8	5	28.28	68.3	0	9,312	29.106	29.335	28.926
1881.....	79.74	102.0	57.5	18	2.28	6	2	26.23	72.5	1	7,541	29.098	29.314	28.761
1882.....	72.05	99.0	52.0	11	4.03	9	3	38.92	75.0	0	7,464	29.122	29.410	28.893
1883.....	76.18	96.5	56.0	17	7.23	10	5	39.46	71.4	0	10,901	29.056	29.351	28.679
1884.....	76.93	98.0	60.5	10	5.18	15	5	41.67	71.7	1	8,733	29.004	29.289	28.809
1885.....	77.06	96.0	56.0	17	6.03	13	5	43.79	72.9	0	8,422	29.065	29.265	28.833
1886.....	79.54	100.0	57.0	21	0.11	4	2	31.83	58.4	0	6,857	29.037	29.183	28.853
1887.....	79.79	102.0	55.5	18	2.14	7	4	24.19	62.7	0	7,010	29.067	29.211	28.901
1888.....	79.52	97.0	62.0	17	4.28	7	7	32.10	71.1	0	7,160	29.104	29.300	28.950
1889.....	76.00	94.0	56.0	6	6.34	10	5	45.40	75.5	0	7,070	29.052	29.264	28.845
Mean...	77.97	98.1	58.7	15	4.35	9	5	37.41	70.5	1	8,414	29.073	29.295	28.822

#### REPORT FOR AUGUST.

A very cool month, being the only August on our 22 years' record in which the mercury failed to reach 90 degrees. The rainfall was excessive, falling but slightly below the unusual precipitation of August, 1888. The rain of the night of the 12th measured 5.68 inches, which surpasses any previous single rainfall on our record, the next to it being the 4 inches of June 13, 1876.

MEAN TEMPERATURE—72.69 degrees, which is 2.75 deg. below the August average. The highest temperature was 89 deg., on the 13th; the lowest was 57 deg., on the 5th and 22d, giving a range of 32 deg. The mercury did not reach 90 deg. on any day. Mean temperature at 7 A.M., 67.08 deg.; at 2 P.M., 81.69 deg.; at 9 P.M., 70.98 deg.

RAINFALL—8.38 inches, which is 4.52 inches above the August average. Rain fell in measurable quantities on 7 days. There were 6 thunder showers. The entire rainfall for the eight months of 1889 now completed has been 34.84 inches, which is 9.76 inches above the average for the same months in the preceding 21 years, and is only 0.26 inch below the average annual rainfall for this station.



MEAN CLOUDINESS—31.5 per cent. of the sky, the month being 4.46 per cent. less cloudy than usual. Number of clear days (less than one-third cloudy), 16; half-clear (from one to two-thirds cloudy), 11; cloudy (more than two-thirds), 4. There were 2 entirely clear days, and none entirely cloudy. Mean cloudiness at 7 A. M., 45 per cent.; at 2 P. M., 41 per cent.; at 9 P. M., 14 per cent.

WIND.—N. W. 12 times, N. E. 14 times, S. W. 16 times, S. E. 36 times, S. 12 times, E. once, N. twice. The total run of the wind was 7,840 miles, which is 533 miles below the August average. This gives a mean daily velocity of 253 miles, and a mean hourly velocity of 10.54 miles. The highest velocity was 84 miles an hour, from 5:43 to 5:58 P. M., on the 12th.

BAROMETER—Mean for the month, 29.154 inches; at 7 A. M., 29.166 inches; at 2 P. M., 29.135 inches; at 9 P. M., 29.162 inches; maximum, 29.460 inches, on the 31st; minimum, 28.979 inches, on the 12th; monthly range, 0.481 inch.

RELATIVE HUMIDITY.—Mean for the month, 78.1; at 7 A. M., 85.7; at 2 P. M., 63.1; at 9 P. M., 85.6; greatest, 100, on three occasions; least, 41.5, on the 5th. There were 2 fogs.

The following table furnishes a comparison with the 21 preceding Augusts:

August.	Mean temperature....	Maximum temperature....	Minimum temperature....	Hot days.....	Rain— inches....	Rainy days....	Thunder storms....	Mean cloudiness....	Humidity.....	No. of fogs.....	Miles of wind....	Mean barometer....	Maximum barometer....	Minimum barometer....
1868.....	73.37	93.0	57.0	3	8.32	6	5	42.87	.....	0	.....	.....	.....	.....
1869.....	78.54	100.0	56.0	16	6.46	13	3	45.49	78.6	1	.....	29.692	29.235	28.924
1870.....	72.46	98.0	53.0	11	6.69	15	7	52.80	72.8	1	.....	29.076	29.326	28.761
1871.....	74.06	100.0	45.1	16	2.76	9	4	39.44	.....	0	.....	.....	.....	.....
1872.....	76.32	97.0	53.0	13	4.71	13	6	33.76	72.0	0	8,698	29.120	29.290	28.867
1873.....	78.35	104.0	56.0	24	0.90	6	2	23.87	57.8	0	8,190	29.134	29.330	28.974
1874.....	82.75	108.0	65.0	26	1.00	6	6	24.95	49.0	0	10,099	29.076	29.289	28.916
1875.....	72.50	91.5	55.0	2	2.90	7	3	32.79	68.1	0	9,484	29.080	29.329	28.919
1876.....	77.70	94.0	63.0	17	4.45	11	6	26.66	72.4	0	8,235	29.103	29.402	28.794
1877.....	74.10	97.0	51.5	7	2.30	5	3	29.57	72.0	0	8,572	29.076	29.289	28.916
1878.....	77.14	98.0	56.0	14	2.22	7	4	19.19	74.6	0	8,188	29.045	29.230	28.879
1879.....	75.78	99.5	49.0	16	1.03	5	5	28.92	63.8	1	6,835	29.053	29.366	28.891
1880.....	75.45	101.0	50.5	14	7.93	10	5	45.70	70.1	0	8,863	29.070	29.349	28.859
1881.....	81.23	104.0	62.0	29	1.57	5	2	31.29	62.5	0	7,991	29.050	29.178	28.875
1882.....	72.55	95.0	52.5	11	0.09	6	1	32.37	72.4	1	7,463	29.116	29.305	28.935
1883.....	72.04	92.5	52.0	1	2.12	6	4	39.89	77.0	0	7,640	29.158	29.353	28.885
1884.....	71.14	92.5	47.5	3	5.49	11	4	43.16	77.8	3	9,392	29.110	29.405	28.849
1885.....	73.22	95.0	53.0	7	3.70	8	3	33.87	71.2	0	9,124	29.165	29.321	28.778
1886.....	79.02	105.0	51.5	18	2.49	11	6	28.60	60.1	0	8,840	29.048	29.214	28.861
1887.....	73.62	99.0	49.0	10	4.88	12	5	46.24	72.1	0	6,990	29.077	29.292	28.906
1888.....	72.91	97.0	52.0	3	9.07	12	6	48.81	79.6	2	7,841	29.100	29.470	28.825
1889.....	72.69	89.0	57.0	0	8.38	6	6	31.50	78.1	2	7,841	29.154	29.460	28.979
Mean....	75.31	97.7	53.9	12	4.07	9	4	35.76	70.0	.04	8,343	29.090	29.321	28.875

## REPORT FOR SEPTEMBER.

The coolest September on our record, except September, 1868. The rainfall was 50 per cent. above the average for this month. The wind-velocity was below the average. The first frost of the season occurred on the 27th, five days earlier than the average date. It was a light and harmless hoar-frost.

MEAN TEMPERATURE—63.17 degrees, which is 3.21 deg. below the September average. The highest temperature was 89 deg., on the 3d; the lowest was 38 deg., on the 27th, giving a range of 51 deg. Mean temperature at 7 A. M., 58.36 deg.; at 2 P. M., 71.07 deg.; at 9 P. M., 61.62 deg.

RAINFALL—5.02 inches, which is 1.58 inches above the September average. Rain fell in measurable quantities on 9 days. There was one thunder shower. The entire rainfall for the 8 months of 1889 now completed has been 39.86 inches, which is

11.34 inches above the average for the same months in the preceding 21 years, and 4.76 inches above the average annual rainfall for this station.

MEAN CLOUDINESS—42.06 per cent. of the sky, the month being 2.17 per cent. cloudier than usual. Number of clear days (less than one-third cloudy), 14; half-clear (from one to two-thirds cloudy), 9; cloudy (more than two thirds), 7. There were 9 entirely clear days and 4 entirely cloudy. Mean cloudiness at 7 A.M., 45.67 per cent.; at 2 P.M., 45.83 per cent.; at 9 P.M., 34.67 per cent.

WIND.—S. E. 22 times, S. 17 times, N. W. 17 times, S. W. 14 times, N. 6 times, W. 5 times, N. E. 5 times, E. 4 times. The total run of the wind was 8,830 miles, which is 1,560 miles below the September average. This gives a mean daily velocity of 294 miles and a mean hourly velocity of 12.26 miles. The highest velocity was 35 miles an hour, from 1 to 3 P.M., on the 12th.

BAROMETER.—Mean for the month, 29.101 inches; at 7 A.M., 29.126 inches; at 2 P.M., 29.084 inches; at 9 P.M., 29.094 inches; maximum, 29.555 inches, on the 27th; minimum, 28.836 inches, on the 23d; monthly range, 0.719 inch.

RELATIVE HUMIDITY.—Mean for the month, 78.6; at 7 A.M., 90.3; at 2 P.M., 63.4; at 9 P.M., 82.2; greatest, 100, on 6 occasions; least, 35, on the 5th. There were three fogs.

The following table furnishes a comparison with the 21 preceding Septembers:

September.....	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Hot days.....	Rain, inches.....	Rainy days.....	Thunder storms.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....	Minimum barometer.....	Maximum barometer.....
1868.....	61.79	93.0	29.0	2	4.29	6	3	46.77	73.6	1	.....	29.149	29.481	28.680
1869.....	63.96	85.0	30.0	0	4.45	6	2	45.44	82.8	3	.....	29.118	29.328	28.870
1870.....	67.15	88.5	53.0	0	2.82	11	2	68.66	63.5	0	.....	29.197	29.493	28.926
1871.....	64.40	92.5	36.0	5	1.49	3	1	34.67	63.5	0	12,084	29.055	29.367	28.641
1872.....	65.99	94.0	37.0	5	2.55	8	4	38.33	65.0	0	12,250	29.125	29.560	28.740
1873.....	65.47	94.0	36.0	6	3.75	6	2	40.78	59.9	2	11,700	29.117	29.396	28.699
1874.....	66.39	94.0	41.0	3	6.45	12	2	45.89	71.7	0	10,276	29.166	29.479	28.947
1875.....	65.75	95.0	38.0	7	1.39	5	1	37.66	64.3	1	11,196	29.103	29.494	28.763
1876.....	64.70	92.0	34.0	4	3.58	6	1	38.89	68.6	1	6,817	29.096	29.359	28.789
1877.....	66.93	90.0	43.0	1	1.35	5	2	33.25	71.7	3	11,972	29.120	29.513	28.663
1878.....	67.58	94.5	41.0	6	2.51	4	2	30.66	66.4	0	10,237	29.162	29.464	28.901
1879.....	65.40	92.0	42.0	2	3.57	6	2	37.00	64.0	0	10,124	29.144	29.424	28.798
1880.....	64.59	85.0	42.0	0	2.46	7	2	32.00	73.2	1	10,722	29.001	29.308	28.693
1881.....	70.59	99.0	42.5	14	5.72	11	4	43.89	60.7	1	10,026	29.155	29.417	28.816
1882.....	69.30	105.0	46.0	7	1.65	5	4	35.67	59.2	1	9,945	29.144	29.462	28.906
1883.....	63.52	91.0	45.5	1	1.25	7	1	40.33	67.8	1	11,409	29.037	29.404	28.810
1884.....	70.36	92.0	48.0	5	9.15	8	5	40.00	76.3	3	8,611	29.084	29.375	28.731
1885.....	65.43	86.0	49.0	0	5.41	8	4	41.00	73.8	2	10,315	29.090	29.377	28.791
1886.....	71.19	97.0	42.0	7	2.34	8	3	32.00	60.7	0	9,910	29.116	29.421	28.796
1887.....	67.56	94.0	43.5	6	5.73	10	1	52.33	72.2	1	8,043	29.170	29.603	28.970
1888.....	66.04	91.0	39.0	2	0.23	1	0	22.44	65.7	1	8,830	29.101	29.555	28.836
1889.....	63.17	89.0	38.0	0	5.02	9	1	42.06	78.6	3	.....	.....	.....	.....
Mean.....	66.23	92.4	40.7	4	3.51	7	3	39.99	68.7	2	10,298	29.116	29.442	28.796

#### REPORT FOR OCTOBER.

The temperature, rainfall and wind-velocity were below the October averages. Nearly all the rainfall occurred on the last three days of the month. The first killing frost appeared on the 27th—seven days later than the average date.

MEAN TEMPERATURE—53.56°, which is .87° below the October average. The highest temperature was 89°, on the 10th; the lowest was 31°, on the 27th, giving a range of 58°. Mean temperature at 7 A.M., 47.13°; at 2 P.M., 62.24°; at 9 P.M., 52.45°.

RAINFALL—2.09 inches, which is .84 inch below the October average. Rain fell in measurable quantities on six days. There were two thunder showers. The entire rainfall for the ten months of 1889 now completed has been 41.95 inches,

which is 10.47 inches above the average for the same months in the preceding 21 years, and 6.85 inches above the average annual rainfall for this station.

MEAN CLOUDINESS.—49.25 per cent. of the sky, the month being 11.46 per cent. cloudier than usual. Number of clear days (less than one-third cloudy), 14; half-clear (from one to two-thirds cloudy), 7; cloudy (more than two-thirds), 10. There were 7 entirely clear days, and 8 entirely cloudy. Mean cloudiness at 7 A. M., 54.52 per cent.; at 2 P. M., 54.84 per cent.; at 9 P. M., 38.39 per cent.

WIND.—N. W. 24 times, N. E. 20 times, S. E. 18 times, S. 10 times, N. 8 times, S. W. 7 times, E. 6 times. The total run of the wind was 8,510 miles, which is 3,053 miles below the October average. This gives a mean daily velocity of 274.5 miles, and a mean hourly velocity of 11.43 miles. The highest velocity was 40 miles an hour, from 2 to 3 P. M., on the 25th.

BAROMETER.—Mean for the month, 29.178 inches; at 7 A. M., 29.202 inches; at 2 P. M., 29.167 inches; at 9 P. M., 29.166 inches; maximum, 29.525 inches, on the 26th; minimum, 28.771 inches, on the 24th; monthly range, .754 inch.

RELATIVE HUMIDITY.—Mean for the month, 72.2; at 7 A. M., 81.8; at 2 P. M., 58.2; at 9 P. M., 76.6; greatest, 100, on two occasions; least, 31.5, on the 4th. There were four fogs.

The following table furnishes a comparison with the 21 preceding Octobers:

October .....	Mean temperature...	Maximum temperature...	Minimum temperature...	Hot days.....	Rain— inches...	Snow— inches...	Thunder storms,	Thunder days .....	Mean cloudiness.....	Humidity.....	Number of fogs...	Miles of wind...	Mean barometer.....	Maximum barometer.....	Minimum barometer.....
1868.....	52.37	82.0	25.0	0	1.58	0.00	4	0	36.34	71.7	5	.....	29.180	29.519	28.790
1869.....	43.97	78.0	15.0	0	0.69	1.25	5	0	25.38	.....	0	.....	29.219	29.554	28.835
1870.....	55.85	79.0	29.0	0	6.96	0.00	12	2	54.19	75.9	1	.....	29.126	29.426	28.758
1871.....	55.37	90.0	32.0	1	3.58	0.00	8	0	36.77	60.2	2	.....	29.110	29.452	28.809
1872.....	54.90	92.0	27.0	2	1.95	0.00	4	2	21.40	53.6	1	11,108	29.140	29.574	28.701
1873.....	50.60	83.0	16.5	0	0.92	0.00	6	1	29.59	57.8	0	13,845	29.171	29.487	28.709
1874.....	55.52	89.0	19.5	0	1.92	0.00	4	1	39.03	67.2	4	11,691	29.199	29.608	28.682
1875.....	53.18	86.0	25.0	0	1.16	0.00	4	1	36.23	56.2	1	13,493	29.115	29.461	28.596
1876.....	53.40	83.5	25.0	0	1.93	0.00	6	2	35.91	59.8	0	11,243	29.058	29.591	28.434
1877.....	54.45	80.0	34.0	0	5.85	0.00	12	3	58.49	79.3	3	7,530	29.095	29.375	28.731
1878.....	55.55	87.0	20.0	0	0.44	1.00	6	1	28.92	63.7	0	15,106	29.144	29.618	28.835
1879.....	60.46	87.5	25.5	0	2.81	0.00	7	2	31.94	71.2	1	10,952	29.253	29.745	28.752
1880.....	52.52	81.0	28.0	0	2.73	0.00	6	0	39.24	66.3	0	12,745	29.094	29.631	28.604
1881.....	59.27	91.0	39.5	1	4.35	0.00	9	3	31.72	74.2	3	12,189	29.123	29.488	28.515
1882.....	58.54	84.5	34.0	3	3.08	0.00	9	5	41.51	69.2	2	11,435	29.049	29.427	28.254
1883.....	52.67	87.0	32.5	0	6.75	1.00	15	4	58.27	72.9	4	11,773	29.132	29.558	28.594
1884.....	57.87	85.0	31.0	0	2.38	0.00	8	2	34.19	74.8	5	10,150	29.179	29.568	28.912
1885.....	51.22	77.0	29.0	0	3.32	0.00	7	2	38.92	70.5	3	9,358	29.089	29.416	28.795
1886.....	60.23	86.0	27.0	0	1.59	0.00	4	3	25.91	59.1	1	10,685	29.219	29.633	28.680
1887.....	52.01	87.0	26.0	0	3.83	0.00	6	1	24.09	65.8	0	12,250	29.178	29.721	28.685
1888.....	53.07	85.0	32.0	0	3.74	0.00	4	2	39.46	66.6	1	11,160	29.078	29.370	28.738
1889.....	53.56	89.0	31.0	0	2.09	0.00	6	2	40.25	72.2	4	8,510	29.178	29.525	28.771
Mean..	54.39	85.0	29.4	0	2.89	0.15	8	2	38.31	67.0	2	11,393	29.142	29.534	28.658

## REPORT FOR NOVEMBER.

The coldest November since 1880, although on our 22 years' record there have been six colder Novembers—in 1868, 1871, 1872, 1875, 1876, and 1880. The barometer was high, the rainfall was normal, the cloudiness and wind-velocity were below the average. The first snow of the season—only a few flakes—occurred on the 25th, fifteen days later than the average date.

MEAN TEMPERATURE—38.25°, which is 1.61° below the November average. The highest temperature was 65°, on the 23d; the lowest was 11°, on the 28th, giving a range of 54°. Mean temperature at 7 A. M., 31.62°; at 2 P. M., 46.90°; at 9 P. M., 37.25°.

RAINFALL—1.96 inches, which is .04 inch below the November average. Rain fell in measurable quantities on three days. There were no thunder showers. The entire



rainfall for the eleven months of 1889 now completed has been 43.91 inches, which is 10.43 inches above the average for the same months in the preceding twenty-one years, and 8.81 inches above the average annual rainfall for this station.

MEAN CLOUDINESS—44.18 per cent. of the sky, the month being 1.95 per cent. clearer than usual. Number of clear days (less than one-third cloudy), 12; half-clear (from one to two-thirds cloudy), 8; cloudy (more than two-thirds), 10. There were 6 entirely clear days and 3 entirely cloudy. Mean cloudiness at 7 A.M., 46.50 per cent.; at 2 P.M., 48.33 per cent.; at 9 P.M., 37.67 per cent.

WIND.—N. W. 43 times, N. E. 16 times, S. W. 14 times, S. E. 7 times, S. 4 times, N. 3 times, E. once. The total run of the wind was 10,060 miles, which is 2,021 miles below the November average. This gives a mean daily velocity of 335.33 miles, and a mean hourly velocity of 14 miles. The highest velocity was 37 miles an hour, on the 21st.

BAROMETER.—Mean for the month, 29.208 inches; at 7 A.M., 29.231 inches; at 2 P.M., 29.183 inches; at 9 P.M., 29.211 inches. Maximum, 29.705 inches, on the 25th; minimum, 28.602 inches, on the 20th; monthly range, 1.103 inches.

RELATIVE HUMIDITY.—Mean for the month, 71.9; at 7 A.M., 88.2; at 2 P.M., 53.1; at 9 P.M., 75.4; greatest, 100, on seven occasions; least, 6, on the 12th. There was no fog.

The following table furnishes a comparison with the 21 preceding Novembers:

November.....	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Windy days.....	Rain, inches.....	Snow, inches.....	Thunder storms, rainy days.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	First white frost.....	First black frost.....	First snow.....	Miles of wind.....	Mean barometer.....	Maximum barometer.....	Minimum barometer.....
1868...	37.59	73.0	17.0	12	3.54	6.0	5 0	51.77	69.8	1	5 16	8 17	N 9	.....	29.204	29.660	28.880
1869...	39.01	72.0	23.0	9	1.86	0.0	8 0	62.89	.....	2	5 25	8 27	O 19	.....	29.111	29.447	28.506
1870...	44.54	72.0	17.0	2	0.57	0.0	3 0	36.83	67.9	0	0 12	0 31	N 23	.....	29.151	29.605	28.658
1871...	35.60	72.5	3.0	13	2.48	5.0	12 1	57.44	72.3	4	5 27	N 1	O 31	.....	29.106	29.546	28.641
1872...	33.63	67.0	-1.0	14	0.01	0.0	1 0	44.89	55.8	0	5 27	O 10	N 14	.....	29.202	29.174	28.650
1873...	42.10	78.0	12.0	4	1.24	0.0	2 0	35.00	55.4	0	5 8	O 6	O 27	.....	15.414	29.129	28.593
1874...	38.35	77.5	5.5	12	3.69	14.0	10 0	56.67	72.4	2	5 15	O 12	N 17	.....	16.104	29.161	28.267
1875...	35.55	70.0	2.0	11	0.30	0.0	3 0	52.78	62.1	0	5 18	O 18	N 13	.....	12.282	29.132	28.582
1876...	37.50	72.0	9.0	8	2.60	3.5	5 0	46.11	70.9	0	5 29	O 1	N 13	.....	12.287	29.171	28.675
1877...	39.23	64.0	9.0	5	1.47	0.0	8 1	48.89	73.8	1	O 4	N 5	N 8	.....	9.494	29.169	28.797
1878...	45.87	72.0	22.0	0	1.55	2.0	5 0	42.00	62.6	1	O 18	O 18	O 26	.....	11.198	29.137	28.635
1879...	44.26	76.5	16.0	5	5.15	2.0	6 4	38.33	70.6	3	O 19	O 24	N 28	.....	11.964	29.147	28.716
1880...	31.58	65.5	7.5	16	2.24	2.5	9 0	51.77	74.4	2	5 13	O 17	N 16	.....	11.325	29.233	28.782
1881...	40.40	71.5	11.0	6	2.55	0.0	5 2	45.55	66.9	2	5 25	N 9	N 18	.....	13.806	29.186	28.599
1882...	43.07	80.0	20.0	3	2.08	0.0	7 0	43.11	72.0	0	O 19	N 11	N 16	.....	11.118	29.241	28.779
1883...	42.77	74.0	14.5	4	0.73	0.0	2 2	38.22	63.9	5	O 14	N 1	O 24	.....	12.692	29.147	28.640
1884...	41.53	70.0	9.5	3	0.80	1.5	3 0	40.77	72.1	5	O 8	O 23	N 18	.....	10.503	29.175	28.634
1885...	43.33	76.0	20.0	1	1.43	0.0	4 0	50.89	65.0	0	O 4	O 6	N 12	.....	11.538	29.065	28.397
1886...	40.08	76.0	15.0	6	1.88	0.5	1	35.11	63.6	0	O 1	O 27	N 11	.....	15.230	29.121	28.551
1887...	42.55	79.0	-1.0	6	1.40	1.0	4 1	38.89	61.5	1	O 12	O 24	N 23	.....	11.610	29.177	28.761
1888...	39.20	79.0	21.0	7	4.54	12.0	6 1	50.67	74.5	1	S 28	N 9	N 9	.....	9.520	29.223	28.809
1889...	38.25	65.0	11.0	4	1.96	0.0	3 0	44.18	71.9	0	S 27	O 27	N 25	.....	10.060	29.208	28.602
Mean,	39.79	72.8	11.6	7	1.96	2.3	5 1	46.04	67.6	2	O 2	O 20	N 10	.....	11.989	29.148	28.657

#### REPORT FOR DECEMBER.

The warmest and driest December on our twenty-two years' record. The mercury came eleven degrees short of reaching zero. There was an entire absence of snow, and the temperature was so mild that building operations were carried on continuously up to the 30th. The only Decembers of our record at all approaching the warmth of the present month were those of 1877 and 1881, whose mean temperatures were respectively 44.43 and 40.10°.

MEAN TEMPERATURE—44.78°, which is 15.32° above the December average. The highest temperature was 72°, on the 12th; the lowest was 11°, on the 29th, giving a range of 61°. Mean temperature at 7 A.M., 38.37°; at 2 P.M., 53.07°; at 9 P.M., 43.84°.

RAINFALL—.08 inch, which is 1.54 inches below the December average. Rain fell in measurable quantities on 2 days. There were no thunder showers. The entire rainfall for the twelve months of 1889, now completed, has been 43.99 inches, which is 8.89 inches above the average annual rainfall of the preceding twenty-one years.

MEAN CLOUDINESS—47.89 per cent. of the sky, the month being 3.23 per cent. clearer than usual. Number of clear days (less than one-third cloudy), 11; half-clear (from one to two-thirds cloudy), 12; cloudy (more than two-thirds), 9. There were 3 entirely clear days and 6 entirely cloudy. Mean cloudiness at 7 A. M., 60.64 per cent.; at 2 P. M., 45.48 per cent.; at 9 P. M., 37.58 per cent.

WIND.—S. W. 25 times, N. W. 19 times, S. E. 17 times, S. 12 times, N. E. 11 times, N. 5 times, W. 3 times, E. once. The total run of the wind was 12,380 miles, which is 632 miles above the December average. This gives a mean daily velocity of 399 miles, and a mean hourly velocity of 16.64 miles. The highest velocity was 60 miles an hour, from 1 to 4 A. M. on the 29th.

BAROMETER.—Mean for the month, 29.110 inches; at 7 A. M., 29.127 inches; at 2 P. M., 29.092 inches; at 9 P. M., 29.110 inches; maximum, 29.679 inches, on the 30th; minimum, 28.429 inches, on the 29th; monthly range, 1.250 inches.

RELATIVE HUMIDITY.—Mean for the month, 76.3; at 7 A. M., 85.1; at 2 P. M., 69.4; at 9 P. M., 74.4; greatest, 100, on the 15th and 30th; least, 7, on the 11th. There were 5 fogs.

The following table furnishes a comparison with the 21 preceding Decembers:

December, .....	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Winter days.....	Zero days.....	Rain, inches.....	Snow, inches.....	Thunder storms, Rainy days.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind....	Mean barometer.	Maximum barometer.....	Minimum barometer.....	
1868.....	23.91°	53.0°	-16.0°	25	4	2.13	16.0	6	0	49.16	77.2	1	29.205	29.847	28.497	
1869.....	29.63	65.0	4.0	7	0	0.87	5.5	6	0	56.56	72.2	4	29.187	29.550	28.640	
1870.....	28.39	64.0	-10.0	15	4	0.72	6.5	5	0	49.79	73.1	1	29.192	29.705	28.566	
1871.....	24.45	58.0	-6.0	21	4	1.12	5.7	6	0	45.27	65.9	1	29.192	29.743	28.516	
1872.....	19.81	58.5	-18.0	24	8	1.24	11.0	4	0	44.30	65.7	1	11,533	29.299	29.674	28.681
1873.....	31.07	67.5	9.0	15	0	4.39	3.5	11	2	61.50	76.2	0	12,254	29.199	29.655	28.666
1874.....	30.75	55.5	-3.0	19	1	1.17	7.5	5	0	47.09	79.4	1	11,820	29.235	29.687	28.704
1875.....	39.35	73.0	0.0	9	1	3.55	0.0	5	2	49.14	66.6	0	13,686	29.027	29.528	28.530
1876.....	23.60	66.0	-5.0	21	3	0.43	4.0	5	0	37.85	68.9	0	11,063	29.260	29.768	28.748
1877.....	44.43	68.0	10.0	2	0	2.21	0.5	10	2	58.17	74.4	0	10,683	29.191	29.575	28.590
1878.....	23.05	53.0	-6.0	25	7	1.93	20.0	6	0	53.75	65.7	1	9,090	29.268	29.735	28.714
1879.....	26.23	65.5	-9.0	21	2	2.39	3.0	5	1	51.83	74.0	2	12,821	29.172	29.702	28.534
1880.....	25.84	61.0	-12.0	20	2	0.43	1.5	8	0	54.08	76.5	4	11,661	29.243	29.733	28.367
1881.....	40.10	63.0	18.0	1	0	0.90	1.0	4	0	55.26	68.3	1	12,679	29.214	29.544	28.735
1882.....	31.25	58.0	-6.5	16	1	1.24	5.0	5	0	61.61	76.7	5	11,247	29.189	29.985	28.478
1883.....	33.72	63.0	3.5	19	0	0.77	2.0	8	0	46.24	68.8	2	13,680	29.199	29.612	28.584
1884.....	23.54	59.6	-6.5	19	6	2.66	6.5	8	0	66.34	80.0	1	10,015	29.189	29.660	28.618
1885.....	32.54	57.0	-1.5	13	1	1.25	10.0	7	0	53.33	69.9	1	11,660	29.177	29.538	28.587
1886.....	24.03	58.0	-6.0	23	4	0.83	2.0	6	0	37.77	73.4	0	12,170	29.254	29.788	28.825
1887.....	28.13	60.0	-8.0	17	4	2.08	3.0	6	1	53.22	80.2	3	12,070	29.147	29.779	28.508
1888.....	34.78	60.0	7.0	12	0	1.78	3.0	6	0	41.29	74.4	0	11,750	29.185	29.598	28.564
1889.....	44.78	72.0	11.0	2	0	0.08	0.0	2	0	47.89	76.3	5	12,380	29.110	29.679	28.429
Mean,	30.15°	61.7°	-2.4°	16	3	1.55	5.3	6	0.4	50.92	72.9	2	11,792	29.193	29.684	28.595

## SUMMARY FOR THE YEAR.

The most notable meteorological features of the year 1889 were the remarkable absence of extremes of heat and cold, resulting in a very mild winter and a very cool summer; the abundant and well-distributed rainfall making this one of the three wettest years on our twenty-two years' record; the phenomenally warm December, whose mean temperature was six and one-half degrees above that of November; the low wind-velocity; the small amount of snow; and the unusual number of fogs, averaging a little more than two per month.



## TEMPERATURE.

Mean temperature of the year, 53.57°, which is .67° above the mean of the 21 preceding years. The highest temperature was 94°, on July 8, the lowest was 3.5° below zero, on the 23d of February, giving a range of 97.5°. Mean at 7 A. M., 47.91°; at 2 P. M., 61.67; at 9 P. M., 52.35°.

Mean temperature of the winter months, 34.22°, which is 5.43° above the average winter temperature; of the spring, 55.11°, which is 1.46° above the average; of the summer, 73.31°, which is 2.30° below the average; of the autumn, 51.66°, which is 1.90° below the average.

The warmest month of the year was July, with mean temperature 76°; the warmest week was July 16 to 22, mean 79.19°; the warmest day was July 7, mean 82.75°. The mercury reached or exceeded 90° on only 6 days (34 below the average number), all of which were in July. This is a most extraordinary deficiency of hot days, the smallest number of such days in any preceding years of our record having been 20, in 1877 and 1884.

The coldest month was February, with mean temperature 27.56°; the coldest week was February 17 to 23, mean temperature 13.56°; the coldest day was February 23, mean 5.50° above zero. The mercury fell below zero on only 4 days, all of which were in February.

The last hoar frost of spring was on May 3, the first hoar frost of autumn was on September 27, giving an interval of 147 days, or nearly five months, entirely without frost. This is eight days shorter than the average interval.

The last severe frost of spring was on March 28, the first severe frost of autumn was on October 27, giving an interval of 213 days, or exactly seven months, without severe frost. The average interval is 198 days. No frosts during spring or autumn caused damage to crops of grain and fruit, and for the first time in several years there was an abundant crop of peaches.

## RAIN.

The entire rainfall, including melted snow, was 43.99 inches, which is 8.89 inches above the annual average. Either rain or snow, or both, in measurable quantities, fell on eighty-one days—twenty-one less than the average. On eleven other days rain or snow fell in quantity too small for measurement. The rain of the night of the 12th of August measured 5.68 inches, which surpasses any previous single rainfall on our record, the next to it being the 4 inches of June 13, 1876.

The number of thunder showers was 35. There were five light hail storms during the year—one in January, three in May, and one in June.

## SNOW.

The entire depth of snow was only six inches, all of which fell in February. This is 15.96 inches below the average, and with the exception of the five inches in 1875, is the smallest annual snow precipitation on our record. Snow fell on 11 days, on 9 of which the quantity was too small for measurement. The last snow flurry of spring was on April 5th; the first snow flurry of autumn was on November 25th—17 days later than the average date.

## FACE OF THE SKY.

The mean cloudiness of the year was 43.82 per cent., which is .3 per cent. below the average. The number of clear days (less than one-third cloudy) was 167; half clear (from one to two-thirds cloudy), 103; cloudy (more than two-thirds), 95. There were 87 days on which the cloudiness reached or exceeded 80 per cent. There were 60 entirely clear and 51 entirely cloudy days. The clearest month was August, with

a mean of 33.36 per cent.; the cloudiest month was February, mean 51.78 per cent. The percentage of cloudiness at 7 A. M. was 47.69; at 2 P. M., 49.56; at 9 P. M., 34.21.

## DIRECTION OF THE WIND.

During the year, three observations daily, the wind was from the N.W. 290 times, S.W. 213 times, S.E. 198 times, N.E. 168 times, S. 113 times, N. 46 times, E. 43 times, W. 24 times. The south winds (including southwest, south and southeast) outnumbered the north (including northwest, north and northeast) in the ratio of 524 to 504.

## VELOCITY OF THE WIND.

The number of miles traveled by the wind during the year was 120,230, which is 15,222 miles below the average for the preceding 16 years. This gives a mean daily velocity of 329.4 miles, and a mean hourly velocity of 13.73 miles. The highest velocity was 84 miles an hour, on August 12th, from 5:43 to 5:53 P. M.; the highest daily velocity was 1,030 miles, on the 29th of December; the highest monthly velocity was 13,380 miles, in May. The windiest months were May and December; the calmest months were June and July. The average velocity at 7 A. M. was 12.75 miles; at 2 P. M., 13.39 miles; at 9 P. M., 13.77 miles.

## BAROMETER.

Mean height of barometer column, 29.125 inches, which is .018 inch above the annual average. Mean at 7 A. M., 29.145 inches; at 2 P. M., 29.107 inches; at 9 P. M., 29.121 inches. Maximum, 29.948 inches, February 23d; minimum, 28.415 inches, January 16th; yearly range, 1.533 inches. The highest monthly mean was 29.244 inches, in February; the lowest was 29.020 inches, in May. The barometer observations are corrected for temperature and instrumental error only.

## RELATIVE HUMIDITY.

The average atmospheric humidity for the year was 73.2; at 7 A. M., 82.1; at 2 P. M., 59.5; at 9 P. M., 78. The dampest month was September, with mean humidity 78.6; the driest month was April, mean humidity 61. There were 28 fogs during the year, which number has been but once equaled—in 1884. The lowest humidity for any single observation was 6 per cent., on November 6th.

The following tables give the mean temperature, the extremes of temperature, the number of inches of rain and snow, the number of rainy days, the number of thunder showers, the mean cloudiness, the relative humidity, the number of fogs, the velocity of the wind, and the mean and extreme barometer heights for each month of the year 1889, and a comparison with each of the 21 preceding years:

## YEAR 1889.

Months.	Mean temp....	Max. temp....	Min. temp....	Rain, inches..	Snow, inches..	Rainy days...	Thun. storms..	Mean cloudi- ness.....	Humidity.....	No. of fogs....	Miles of wind,	Mean barom....	Max. barom....	Min. barom....
January....	30.31	49.0	7.0	0.79	0	2	0	37.31	77.5	8	11,620	29.143	29.477	28.415
February..	27.56	65.0	-3.5	2.20	6	6	0	51.78	76.0	3	11,020	29.244	29.948	28.570
March.....	44.73	71.0	22.0	2.30	0	7	2	42.80	69.4	1	11,110	29.127	29.539	28.600
April.....	56.37	86.0	35.0	2.52	0	8	5	44.16	61.0	0	11,550	29.095	29.496	28.551
May.....	64.23	89.0	38.0	8.27	0	14	3	48.47	68.9	0	13,380	29.020	29.394	28.617
June.....	71.24	90.0	51.5	4.04	0	7	7	39.56	73.3	2	6,860	29.061	29.401	28.664
July.....	76.00	94.0	56.0	6.34	0	10	5	45.05	75.5	0	7,070	29.052	29.264	28.845
August.....	72.69	89.0	57.0	8.38	0	7	6	33.36	78.1	2	7,840	29.154	29.460	28.979
September	63.17	89.0	38.0	5.02	0	9	0	42.06	73.6	3	8,830	29.101	29.555	28.836
October.....	53.56	89.0	31.0	2.09	0	6	2	49.25	72.2	4	8,510	29.173	29.525	28.771
November,	38.25	65.0	11.0	1.96	0	3	0	44.18	71.9	0	10,060	29.208	29.705	28.602
December,	44.78	72.0	11.0	0.08	0	2	0	47.89	76.3	5	12,380	29.110	29.679	28.429
Mean.....	53.57	79.0	29.5	3.66	0.5	7	3	43.82	73.2	2	10,020	29.125	29.536	28.673

## TWENTY-TWO YEARS: 1868-1889.

Year.	Mean temperature.....	Maximum temperature.....	Minimum temperature.....	Hot days (above 90°).....	Zero days.....	Days between snow & frost....	Rain— inches.....	Snow— inches.....	Wet days.....	Thunder storms.....	Mean cloudiness.....	Humidity.....	No. of fogs.....	Miles of wind.....	Mean barometer.....
1868...	52.77	101.0	-16.5	43	7	160	37.48	27.5	77	.....	42.35	.....	.....	.....	.....
1869...	50.51	96.0	-5.0	23	2	167	38.51	18.0	105	33	49.23	78.2	19	.....	29.103
1870...	53.70	102.0	-10.0	51	6	197	31.32	9.5	100	27	47.88	68.4	13	.....	29.097
1871...	53.56	103.0	-6.0	48	5	218	33.23	29.7	120	24	47.37	65.9	6	.....	29.076
1872...	51.30	97.0	-18.0	45	16	192	32.63	23.2	116	40	44.33	64.4	11	.....	29.112
1873...	51.96	104.0	-26.0	48	9	165	32.94	26.5	101	17	42.46	64.0	6	154,598	29.093
1874...	53.68	108.0	-3.0	58	2	187	28.87	43.0	99	20	45.54	65.7	14	145,865	29.121
1875...	50.63	99.0	-16.5	32	12	196	28.87	5.0	106	21	44.81	66.7	5	145,316	29.102
1876...	52.76	98.0	-5.0	36	4	179	44.18	25.7	102	29	41.27	66.8	4	148,120	29.102
1877...	54.16	99.0	-9.0	20	3	217	41.00	15.5	125	39	47.12	72.6	11	113,967	29.117
1878...	55.31	98.0	-6.0	35	7	228	38.39	25.5	107	33	40.65	70.2	5	125,793	29.067
1879...	54.68	99.5	-16.0	48	13	203	32.68	10.3	90	36	40.01	67.1	10	124,768	29.127
1880...	54.00	101.0	-12.0	41	2	211	32.65	7.0	89	29	40.15	67.9	13	146,030	29.123
1881...	54.65	104.0	-8.0	68	6	210	33.27	32.5	110	31	47.42	70.1	11	141,430	29.103
1882...	54.94	105.0	-6.5	40	1	232	27.60	18.0	102	26	45.41	68.6	14	137,736	29.113
1883...	51.63	96.5	-14.0	26	8	217	40.65	12.5	106	32	45.24	69.7	13	141,164	29.135
1884...	51.39	98.0	-21.5	20	14	198	43.45	29.0	105	35	47.56	72.6	28	131,188	29.111
1885...	51.01	96.0	-14.5	27	21	176	36.97	33.0	103	31	44.57	71.3	9	125,013	29.107
1886...	52.96	105.0	-18.0	53	16	203	24.25	23.5	103	28	39.64	66.5	5	127,769	29.111
1887...	53.12	102.0	-20.0	40	16	203	33.84	25.0	91	23	40.91	69.8	13	132,367	29.109
1888...	52.28	99.0	-18.0	28	9	203	44.17	22.0	83	37	42.40	72.2	15	128,185	29.132
1889...	53.57	94.0	-3.5	6	4	213	43.99	6.0	81	35	43.82	73.2	23	120,230	29.125
Mean	52.28	100.2	-12.4	39	9	199	35.50	21.3	101	29	44.11	69.2	13	134,556	29.109

## RAINFALL FOR TWENTY-ONE YEARS, AT LAWRENCE, KANSAS.

A study of the following table will disclose certain features of the rainfall of eastern Kansas, in which section Lawrence may be fairly considered as a representative station.

One feature consists in the fact that only about one-ninth of the annual precipitation occurs in the winter months. In the eastern States the amount of rain, including melted snow, is nearly as large in winter as in each of the other seasons. In Kansas, which has less rain in winter than any States in the Union except Minnesota and Nebraska, the apparent deficiency is abundantly made good by a more copious supply of rain in spring, summer and autumn than is received by many of the other States.

The distribution of rain through the months of the year is highly conducive to agricultural prosperity. Beginning with January, in which the average precipitation is reduced to its minimum, there is a constant increase in the average for each month until June and July, when the rainfall reaches its maximum and begins to decline, each succeeding month showing a decrease in the average amount, until the minimum is again reached, in January. It is rarely the case that the monthly rainfall during the growing season departs from the normal to such an extent as to seriously injure the staple crops.

During these twenty-one years of observation there has been only one drouth extending over the entire State of Kansas. This was in the year 1874, since which time there have been but two partial crop failures of anything more than a local character.

This table also indicates the existence of a rainfall cycle of about seven years in duration, each septennial period including two or more consecutive years of precipitation above the average and a similar series of years of precipitation below the average. Thus the years 1868-1869, 1876-1878, and 1883-1885 exhibit an excess of rain, while the intervening periods exhibit a deficiency.

Year.	January.....	February.....	March.....	April.....	May.....	June.....	July.....	August.....	September.....	October.....	November.....	December.....	Spring.....	Summer.....	Autumn.....	Winter.....	Annual rainfall.....
1868...	0.36	0.19	3.46	2.95	2.81	3.80	4.05	8.32	4.29	1.58	3.54	2.13	9.22	16.17	9.41	2.68	37.48
1869...	2.90	1.44	1.15	2.43	3.64	7.57	5.65	6.46	4.45	0.69	1.86	0.87	7.22	19.08	7.00	5.21	38.51
1870...	0.67	0.03	1.86	1.08	2.46	1.88	5.58	6.69	2.82	6.96	0.57	0.72	5.40	14.15	10.35	1.42	31.32
1871...	1.11	2.43	1.73	2.38	2.79	4.06	7.30	2.76	1.49	3.58	2.48	1.12	6.90	14.12	7.55	4.66	33.23
1872...	0.17	0.82	2.92	4.74	5.72	1.30	6.50	4.71	2.55	1.95	0.01	1.24	13.38	12.51	4.51	2.23	32.63
1873...	2.66	0.86	1.34	4.42	7.12	2.96	2.38	0.90	3.75	0.92	1.24	4.39	12.88	6.24	5.91	7.91	32.94
1874...	2.35	0.95	2.30	2.86	1.41	3.58	1.19	1.00	6.45	1.92	3.69	1.17	6.57	5.77	12.06	4.47	28.87
1875...	0.12	0.80	2.61	2.54	3.39	3.45	6.60	2.90	1.39	1.16	0.36	3.55	8.54	12.95	2.91	4.47	28.87
1876...	0.57	0.36	4.51	3.38	6.75	12.11	3.51	4.45	3.58	1.93	2.60	0.43	14.64	20.07	8.11	1.36	44.18
1877...	1.17	0.89	3.40	3.13	6.45	7.20	5.76	2.30	1.35	5.85	1.47	2.21	12.98	15.26	8.67	4.18	41.09
1878...	3.05	2.83	2.67	5.48	5.66	5.67	4.30	2.22	2.51	0.44	1.55	1.98	13.81	12.19	4.50	7.89	38.39
1879...	0.37	0.41	0.37	4.18	1.60	7.14	3.66	1.08	3.57	2.81	5.15	2.39	6.15	11.83	11.53	3.17	32.68
1880...	1.80	0.73	2.03	1.75	4.11	4.10	2.34	7.93	2.46	2.73	2.24	0.43	7.89	14.37	7.43	2.96	32.65
1881...	0.34	4.60	1.66	1.17	3.51	4.52	2.28	1.57	5.72	4.35	2.55	0.90	6.44	8.37	12.62	5.84	33.27
1882...	0.70	1.66	1.62	3.20	3.53	4.72	4.03	0.09	1.65	3.08	2.08	1.24	8.35	8.84	6.81	3.60	27.60
1883...	0.73	2.31	1.28	2.12	7.63	7.73	7.23	2.12	1.25	6.75	0.73	0.77	11.05	17.08	8.73	3.81	49.65
1884...	1.28	1.13	2.43	5.62	3.57	3.81	5.18	5.49	9.15	2.38	0.80	2.56	11.67	14.48	12.33	4.97	43.45
1885...	1.66	1.12	0.87	5.72	4.07	2.39	6.03	3.70	5.41	3.32	1.43	1.25	10.66	12.12	10.16	4.03	36.97
1886...	2.28	0.56	1.63	1.38	5.72	3.71	0.11	2.49	2.34	1.59	1.61	0.83	8.73	6.31	5.54	3.67	24.25
1887...	1.23	1.58	2.75	3.33	1.12	3.77	2.14	4.88	5.73	3.83	1.40	2.08	7.20	10.79	10.96	4.89	33.84
1888...	0.93	1.27	5.47	2.58	1.97	8.31	4.28	9.07	0.23	3.74	4.54	1.78	10.02	21.66	8.51	3.98	44.17
Mean,	1.26	1.28	2.29	3.17	4.05	4.94	4.26	3.86	3.44	2.93	2.00	1.62	9.51	13.06	8.37	4.16	35.10

MEAN TEMPERATURES OF MONTHS, SEASONS AND YEARS, AT LAWRENCE, KANSAS.  
FOR TWENTY-ONE YEARS.

From the following table it will be seen that the monthly temperatures are subject to considerable variation. Thus March and November have in one or two instances been winter months, while May and September are occasionally summer months. The second half of May and the first half of September frequently belong to the summer season.

The mean annual temperature is about 53.5 degrees, which does not differ essentially from that of States to the east of Kansas in the same latitude.

In their effect upon the population the summers of Kansas are less oppressive and exhausting than might be inferred from their frequent length and high temperature. Of the twenty-one summers which have come under our observation, thirteen have been of medium temperature, four have been very hot and four very cool. The medium summers are comfortable, the cool summers are delightful, and there are important compensations by which the hot summers are rendered far more tolerable than those of States to the east of Kansas between the same parallels of latitude. Among these compensations are the very general coolness of the nights, no matter how hot the days may be; the unusual dryness of the atmosphere, which cools the surface of the body by a more rapid evaporation of the perspiration; and the almost constant brisk movement of the air, which rarely becomes calm.

The autumns of Kansas furnish the most enjoyable weather of the year, the mild Indian summer frequently continuing until nearly Christmas.

The winters of Kansas have enough rigor to protect the population from the chronic languor too often engendered by a southern climate. Without the extreme severity which benumbs the faculties, our winter temperature is sufficiently low to impart that healthful stimulus to mental and physical activity which seems essential to the highest development of the human race.

Of the twenty-one winters whose records are before us, twelve have been of moderate temperature, with mean between 26 and 32 degrees; five have been severe, with mean below 25 degrees, in one winter (1874-75) reaching 22.70 degrees; and four have been exceedingly mild, with mean above 32 degrees, in one winter (1877-78)



reaching 39.54 degrees. The winters generally break up in February, the first wild flowers often appearing before the end of that month.

Year.....	January.....	February.....	March.....	April.....	May.....	June.....	July.....	August.....	September.....	October.....	November.....	December.....	Spring.....	Summer.....	Autumn.....	Winter.....	Yearly mean.....
1868.....	23.47	35.30	51.15	49.14	65.90	74.15	85.08	73.37	61.79	52.37	37.59	23.91	55.40	77.83	50.58	27.56	52.77
1869.....	30.38	30.30	34.53	50.97	61.74	68.80	74.25	78.54	63.96	43.97	39.01	29.63	49.08	74.22	48.98	30.10	50.51
1870.....	28.88	34.88	37.25	56.20	67.01	72.59	79.22	72.46	67.15	55.85	44.54	38.39	53.49	75.13	55.85	30.72	53.70
1871.....	28.57	35.03	47.10	57.30	65.87	75.87	79.14	74.06	64.40	55.37	35.60	24.45	56.76	76.08	51.79	29.35	53.56
1872.....	24.17	30.08	36.79	55.92	65.33	76.14	77.11	76.32	65.99	54.90	33.03	19.81	52.69	76.80	51.31	24.69	51.30
1873.....	18.23	29.98	42.33	48.71	63.95	75.89	76.95	78.35	65.47	50.50	42.10	31.07	51.66	77.40	52.69	26.43	51.96
1874.....	27.77	27.26	39.13	47.69	68.89	76.50	83.16	82.75	66.39	55.52	38.35	30.75	51.90	81.01	53.42	28.39	53.68
1875.....	15.42	21.92	37.10	49.70	65.00	75.47	76.63	72.50	65.75	53.18	35.55	39.35	50.60	74.87	51.49	25.56	50.63
1876.....	34.70	37.80	34.25	55.60	65.00	70.24	78.60	77.70	64.70	53.40	37.50	23.60	51.62	75.51	51.87	32.03	52.76
1877.....	25.60	39.65	40.03	53.90	64.50	72.03	75.13	74.10	66.93	54.45	39.23	44.43	52.81	73.72	53.54	36.56	54.16
1878.....	33.97	40.22	50.90	58.60	62.60	69.79	78.45	77.14	67.58	55.55	45.87	23.05	57.37	75.21	56.33	32.41	55.31
1879.....	23.49	34.06	48.22	56.40	69.50	73.22	79.14	75.78	65.40	60.46	44.26	26.23	58.04	75.98	56.71	27.93	54.68
1880.....	41.23	37.58	42.38	56.92	70.59	73.57	75.75	75.45	64.59	52.52	31.58	25.84	56.66	74.92	46.23	34.88	54.00
1881.....	21.60	25.78	37.47	52.47	69.86	77.25	79.74	81.23	70.59	59.27	40.40	40.10	53.27	79.41	56.75	29.16	54.65
1882.....	32.68	41.65	46.90	56.83	60.27	74.14	72.05	72.55	69.30	58.54	43.07	31.25	54.67	72.91	56.97	35.19	54.94
1883.....	19.65	27.92	40.90	57.18	62.05	71.38	76.18	72.04	63.52	52.67	42.77	33.72	53.38	73.20	52.99	27.10	51.66
1884.....	20.99	28.03	41.56	50.42	62.24	71.07	76.93	71.14	70.36	57.87	41.53	23.54	51.41	73.05	56.59	24.19	51.30
1885.....	18.74	20.83	40.55	53.88	62.79	72.57	77.06	73.22	65.43	51.22	43.33	32.54	52.41	74.18	53.33	24.04	51.01
1886.....	14.32	31.64	40.40	54.80	68.50	71.85	79.54	79.02	71.19	60.23	40.08	24.03	54.57	76.80	57.17	23.33	52.96
1887.....	20.48	30.43	43.41	57.66	67.88	73.89	79.79	73.62	67.56	52.01	42.55	28.13	56.32	75.77	54.04	26.35	53.12
1888.....	17.70	32.74	38.63	57.55	62.08	73.10	79.52	72.91	66.04	53.07	39.20	34.78	52.75	75.18	52.77	28.41	52.28
Mean,	24.86	32.05	41.47	54.18	65.31	73.62	78.07	75.44	66.38	54.43	39.86	29.46	53.65	75.61	53.56	28.68	52.90

## SPECIAL REPORTS ON SMALL-POX AND OTHER CONTAGIOUS AND PESTILENTIAL DISEASES.

### SMALL-POX IN DECATUR COUNTY.

BY C. H. GUIBOR, M.D., MEMBER OF STATE BOARD OF HEALTH.

BELOIT, KANSAS, January 16, 1889.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kansas—*  
DEAR DOCTOR: I received your telegram of Saturday, January 12, instructing me to go to Oberlin, Kansas, and confer with the County Health Officer of Decatur county. I at once arranged to visit Oberlin, and started on first train Sunday morning, January 13. Arrived at Edmond via Missouri Pacific Railway at 3 o'clock P. M.; drove from there to Norton, a distance of twenty miles, (in a snow-storm,) reaching Norton at 6 P. M. At Norton I learned that no train would reach Oberlin until 11:30 Monday night. Not wishing to be delayed until then, I went via the Rock Island Railway to Selden; reached Selden at noon, and drove from there to Oberlin (distance twenty-four miles) through another storm. On my arrival at Oberlin, I at once communicated with Dr. Bariteau, the County Health Officer. At my request he got the Mayor and the physician who had been attending suspects together for a conference, the results of which I embody in the accompanying report.

At Norton I learned that quarantine had been established against Oberlin, and was being strictly enforced by the Mayor of Norton. I called on Dr. R. E. White, the Mayor, and was shown a number of telegrams from the Mayor of Oberlin, informing him of the fact of the existence of small-pox in that city. I desire at this time to ask you, in the name of the State Board of Health, to communicate at once with the above-named gentlemen, expressing our thanks for their prompt action in this matter; not that we should commend anyone for doing their duty, as that is always expected, but that they should have done it so promptly, without a fear of public censure. We who know how hard it is to get proper authorities to act, can well appreciate such promptness and good judgment.

At 7:30 P. M., January 14, met at the office of Dr. Bryant, Oberlin, Kansas. The Mayor, Hon. W. T. S. May, and Drs. Bariteau, Mead, and Bryant were present. Upon inquiring, I learned that the physicians above named had visited cases of small-pox. Dr. Bariteau not satisfied that it was small-pox—Drs. Bryant and Mead that it was; and in order to arrive at a correct

opinion and satisfy the public as to the facts, I asked for and received the following statements:

Dr. Bariteau states that on the 12th of December, 1888, he was called to attend a young man who had arrived from Colorado about the 5th of that month; found him with a temperature of 102 (he thinks), pulse 96. Next morning (6th), temperature 100, pulse 96. On the 7th, temperature 98½, pulse 78; and treated him for gonorrhœa. Was in attendance five or six days; quit visiting him, and did not see him until the third day after he quit visiting him. At his last visit, on the fifth or sixth day of sickness, he noticed some pimples on the patient's face, but did not think it of any significance. On again being called as above stated (three days after), he found the patient covered with vesicles over the entire body and scalp. Vesicles of a grayish color, one-eighth to one-fourth of an inch in diameter; temperature and pulse normal; no headache or backache; right side of face swollen; some cough; no congestion of conjunctiva; no inflammation of mucous membranes; no unusual odor; a succession of vesicles appearing for three or four days, some disappearing whilst others were forming; vesicles umbilicated, disappearing in four or five days; no pitting at seat of vesicle; no itching. When vesicles disappeared they left a red spot. The Doctor thought it was a case of secondary, and treated it accordingly, although the time of primary infection was only, if at all, less than thirty days.

This case was seen by Dr. Bryant about January 1, 1889, who states that the patient told him that he rode with a man on the cars who was all broken out—this was in December, 1888—and that he found some pitting around the nose of the patient. Dr. Bryant states that he was called to see the mother of this boy, "who had been nursing him," on December 29, 1888, and gives the following symptoms, etc.:

Commenced with a chill, intense headache and backache; temperature 105, pulse 120. These continued with little variation until the fourth day, when papules appeared on the forehead, preceded by erythema; eyes congested, face swollen, cough; photophobia. Vesicles formed the second day after and extended over the entire body, being complete in about two days. Vesicles became pustules about the seventh or eighth day from first appearance of papules; umbilicated eruption, eruption in mouth during vesicular stage; temperature and pulse almost normal, and very little pain in head or back; pustules of all sizes, with inflamed bases, thickest on face and hands. Had suppurative fever about the ninth day. Has not seen the patient for a week, so cannot say as to the condition. There was also an offensive odor arising from the patient.

Dr. Mead called to see young Potter. History in brief as follows: Temperature 105, pulse not given; headache and backache—ache all over. About third day, papules on forehead and mouth; cough, expectoration, vesicles, followed by sore throat, vesicles over entire body, face swollen,

eyes congested, papules or vesicles in roof of mouth; burning, shooting pains in face; papules to pustules about eighth day; suppurative fever; confluent spots in face umbilicated, with red base; crusts formed, crusts exfoliated on some portions of the body; destruction of tissue not great, and only, so far, in a limited number of places. Odor present at this time—January 14, 1889.

The above is about the history of the eight cases so far reported; and as Dr. Bariteau did not see the other cases, and as all the others were in direct contact with his case (the first one), he did not dissent from the opinion that it was small-pox. I could form no opinion other than that it was that loathsome disease, and so expressed myself. It was urged, however, by the Hon. Mayor, and Counselor W. S. May, as well as the physicians present, that the citizens would not be content unless I visited one or more cases and gave an opinion based on actual observation. I consented, using necessary precautions. I found cases as represented, and so reported. I am pleased to report that all necessary measures are being adopted to prevent its spread, and quarantine will be strictly enforced.

It is not the province of your committee-man to give details of measures adopted by the authorities of the city of Oberlin; therefore, will leave that for the county health officer to report.

In closing, I beg to express my thanks through you to Dr. White, of Norton, the Hon. Mayor, W. S. May, Drs. Bariteau, Bryant and Mead, of Oberlin, for favors shown, and hope that, should other communities become afflicted with the before-mentioned disease, they may have as wise and energetic counselors as the above-named gentlemen.

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#### SMALL-POX IN DECATUR COUNTY.

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BY A. W. BARITEAU, M.D., COUNTY HEALTH OFFICER OF DECATUR COUNTY.

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OBERLIN, KANSAS, March 11, 1889.

*J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—*  
DEAR SIR: In obedience to instructions from your office, I hand you a report of the origin, progress, and, as we hope, termination of the small-pox epidemic at Oberlin, Kansas, during the winter of 1888-89. In some details as to age, number of cases of varioloid, and age of previous vaccinations, etc., it has been found impossible to give accurate figures.

#### ORIGIN.

About December 1, 1888, a young man about 18 years of age returned from a pleasure trip to the West, extending his travels as far as Denver, Colorado. For several days after his return he complained of feeling poorly,



and as his parents were somewhat alarmed concerning him, he in the meantime claimed to have contracted a severe cold. Certain symptoms appearing, he at last confessed to having contracted gonorrhœa before leaving Denver, Colorado. On December 13th, he was so much worse—he at this time being confined to his bed—that it was thought best to call a physician. His father called at my office, and after stating what the young man had confessed, wished me to treat him. Upon reaching the bedside of the patient, I found him suffering from headache, and slight soreness of the throat. Temperature  $102^{\circ}$ , pulse about 96. Urethral discharge, burning sensation from micturition; the urethral discharge being copious. Tongue, thickly furred with yellowish-brown coating; fauces somewhat inflamed; pain upon pressure in the right hepatic region; a yellowish tinge of the skin and also of the eyeballs. I diagnosed the case as gonorrhœa, with functional derangement of the liver, and began treatment accordingly, commencing with pil. hydrarg. grs. 15, to be followed with sulph. magn., also urethral injections.

On the morning of the 14th I found the temperature to be 101, pulse 86; no headache; much less soreness of the throat. During the evening and night he had vomited a great quantity of green or yellow matter, very bitter (bile), and a considerable quantity also appeared in the stools. Tongue had cleared considerably; fauces about the same as on previous day, but no soreness; urethral discharge decreased. On the 15th, in the morning, the temperature was reduced to normal,  $98\frac{1}{2}$ , pulse 75; entirely free from headache; no soreness of throat; urethral discharge had nearly ceased; no burning sensation in the urethra, and he was feeling splendidly. On the 16th I again called, and found him looking finely, and beginning to ask for food. During the previous days I had forbidden him to either eat, or drink any acids—especially for the first forty-eight hours. He said he felt as well as he ever did, except being weak. I told him that it would not be necessary for me to come again, and, prescribing sulph. quinia in  $1\frac{1}{2}$ -grain doses, I was about to leave, when he called my attention to a few very small pimples on his forehead. I merely glanced at them, and told him I thought his blood had become somewhat impure by reason of the disease from which he had suffered and the deranged condition of the system, and gave the matter no further thought. His condition when I left him that morning was to all appearance very flattering. He had felt no symptoms of gonorrhœa for the last thirty-six hours; no functional disturbance of any of the digestive organs; temperature normal, pulse 75; no soreness of throat; and skin healthy, excepting the few pimples on the forehead. I was somewhat surprised at the rapid termination of the gonorrhœa attack, but did not give that further thought.

On the morning of December 14th, two days after I had discharged my patient, his father came to the office somewhat hurriedly and excited, and wished me to go at once to the house and see the boy, as he was "broken

out all over." Upon reaching the bedside I found my lately convalescent (?) patient in the following condition: Scattered over the entire body, and on an average of about five to the square inch, were vesicles very uniform in size, and which were about the diameter of an ordinary pea, and in form and color resembled one-half of one pasted on the skin, the base surrounded by a bright red line about one-sixteenth of an inch wide or thick; each vesicle clear and distinct from its neighbor, raised about one-eighth of an inch, or a little less, above the skin, and filled to their full extent. There were none in progress of filling; no papules. Temperature and pulse the same as when I left him two days previous. No abnormal sensation. Said he felt "first rate;" no itching or burning. My suspicions in regard to variola were at once aroused, but in the absence of essential appearances, with the exception of the vesicles, I could not believe it was small-pox, but thought it was a syphilitic eruption, although the initial lesion was absent. Unwilling to assume the responsibility of deciding this matter alone, I called for counsel. Accordingly, Dr. M— was called, and, after examining the case agreed with me as to its nature and origin; we also agreed as to treatment. We questioned him as to where he could have contracted the disease. He denied ever having been in contact or even in sight of any person having such eruption, which convinced us that our diagnosis was correct, and the subsequent course of the disease was such as to still further confirm us in our opinion. The next day showed an increase in the number of vesicles; the second day the first ones that came out had begun to shrink away, and on the fourth day they had disappeared, leaving a dark-red spot. There was no forming of crusts or scabs; no itching or burning sensation; no increase of temperature, and he said he "felt perfectly well." I continued to visit him until December 26, when probably two-thirds of the vesicles had disappeared, when I thought there was no necessity for further attendance, and so informed him. Two days after, he was out on the street for a couple of hours; since that time has had no further treatment, but has been compelled to remain in quarantine on account of other members of the family.

This is the extent of my personal experience in that family. I have been induced to go more into detail in this case, for no others have resembled this in mode of onset, course, or result. Much fault has been found because *small-pox* was not announced at once, when he was first attacked. In connection with this case, I will state here that probably fifty persons had called at the house during his illness; some ladies had called and rendered assistance to the mother, an old lady, by making beds and sweeping rooms, but not one of them contracted the disease.

The course of the epidemic from this time (December 28) was entirely different in mode of attack, course, and duration. I will also state here that during the entire period of my attendance upon the case there was none of the "smell" that invariably accompanies small-pox in or about the house. Since the termination of my experience with this case, I have watched the approach and development of four typical cases of variola,

one of which I was in daily attendance upon for three weeks—this being my wife, I being quarantined in the house during that time; and these cases bear no more resemblance to the first than scarlatina does to small-pox.

On the 22d of December a brother of my patient came home on a visit from Topeka, Kas., where he had been attending school. He was at home until December 31, when he was taken sick, and being a member of the "Order of American Woodmen," the physician of that society was called to treat him, who diagnosed the case as *typhoid fever*. Within a day or two the mother was attacked, and as her symptoms were so much more severe, her disease was diagnosed as *typhus fever*; and from the doctor's history of the attack in both cases, they were both strongly-marked cases of variola. A member of the State Board, who was sent here to name the disease, remarked to him, "Your description of the premonitory symptoms, and approach and development of the disease, is nearly equal to DeCosta, and equal, if not superior, to Bartholow;" and continuing, "and I doubt if Bartholow could give a better." The other physician present at this time, who had a case, in giving the history of his case gave the premonitory symptoms apparently from his own observations, without any embellishments whatever, but which agree with my own in the four cases I have mentioned, which were: Very severe headache, nausea, backache, seemingly unedurable; sore throat; some pain in the lungs, chills, high temperature—in one of my cases reaching  $104\frac{1}{2}$ ; brain derangement, hallucinations. These symptoms are developed during the first two or three days of the disease. Next, the eruption appears; first in small papules as hard as a small shot, and the size of a pin-head; successive crops appearing during the next forty-eight hours. These papules began filling about twenty-four hours after first appearance, and by the end of the fourth day the first have filled and begin to have the umbilicated appearance, and in type or form which the disease presented during this epidemic by the tenth day from the beginning of the eruptive stage the greater portion of the vesicles upon the exposed portions of the body, such as the face and hands, have become dried and beginning to separate from the skin. Very few of the cases so far as known will be pitted.

All of the cases which first came down did so at periods ranging from nine to twelve days from the time the young man came from Topeka, and not a case, so far as known, during the three weeks that elapsed from the date of the return home of the first; and I think it is highly probable for this second one to have been exposed, and besides bringing it here in his own system, also brought the contagion or infection in his clothing, for the type is entirely different in the cases that followed, including his own.

#### PROGRESS.

In addition to the first two cases mentioned in this family, the mother, another brother, his wife and two children, were all in the house together.

The married brother and family, though living six miles in the country, stayed several nights with the family in town, and contracted it in that manner. They were living part of the time at home, and the eruption came out on one of them before they came in town permanently; and at this time a neighbor and his wife and two children spent an evening with them, and all of them took the disease. A servant girl who worked for the old folks contracted the disease and went home, and the rest of the family, eight children and parents, all had it—making eleven ill in one family. One death occurred in this family—an infant six weeks old, being one of a pair of twins, one of which was born dead; and this would probably have died of inanition, if there had been no small-pox.

A neighbor's boy about the age of the first one and a chum of his also, visited the house often, but did not come down with the disease until about ten days after the return of the one from Topeka. His father is proprietor of one of the leading hotels here, and the house was at once quarantined.

The whole number of cases up to date in the city and surrounding country is forty-six. No deaths with the exception of the babe mentioned. The form or type is the "discrete"—not a case of confluent, so far as I have learned; and in the majority of cases, contact or touch has been necessary to communicate it. Two cases have been contracted from varioloid; one of these cases of varioloid from inhaling dust from the floor of the hall of the hotel, where the young man was down with the disease (variola).

#### VACCINATION.

Immediately upon its being thought to be small-pox, vaccination began in the city, and following your instructions as to general vaccination, notice was sent to every township trustee to enforce the order, and it was pretty generally obeyed, though there were some people of foreign birth who refused to comply. Probably about 1,000 in the city and immediately surrounding it, were vaccinated, and of all ages from six months upwards; some tried as many as seven times before they were successful. A considerable proportion of it failed altogether.

All but three or four who were attacked by the disease had never been vaccinated; one or two while they were children, did not secure immunity. One whom I vaccinated the day he was sent to the pest-house—he had been sleeping in the same apartment with one of the victims—had a very severe attack; and after the scabs had dried and most of them came off, the virus in the arm began to work, and he had a very sore arm.

Many cases where vaccination had been performed after exposure to small-pox, and living in the same house during the duration of the attack, failed to contract the disease, providing the virus worked. In my own house, I had that condition of things. My daughter and her husband and four children came to my house from a neighboring county and remained over night, before the eruption appeared upon my wife. This state of affairs quarantined both families, besides a young lady who was stopping with us.



I vaccinated the entire party, which, including myself and family, made a total of ten persons. The virus worked on all but two young children, one at the breast, and those two were the only ones to contract the disease. This convinces me beyond a doubt, that immediate and successful vaccination is a *sure preventive*, even to living in the same house or room with a small-pox patient; and I find that remote vaccination, *as a rule*, will so modify the disease that varioloid, at the worst, will be the only result, even if it does not prevent that. I have observed a feature of small-pox which somewhat atones for its loathsome nature, and that is, that previous conditions or diseases in possession of the body before the attack, are eliminated during the progress of the disease; one of the cases here had rheumatism for several years, and also diseased eyes (granulated lids), and since recovery has felt nothing whatever of rheumatism, and the granulations have all healed. This may be an isolated case, and these diseases may return, but at present they are *non est*.

#### QUARANTINE.

On January 6th, I placed the house where the disease originated under quarantine, and, the following day, the hotel; and as fast as cases appeared they were placed in the same condition. I have ordered all who have been affected with the disease to remain isolated from the outside world for five weeks, and at the pest-house they were inmates for six and seven weeks before being released.

#### DISINFECTION.

The disinfection of houses where the disease has been, has not been as thorough in all cases as I could wish. During the time I was quarantined at home a health officer for the city was appointed, and his orders in this respect have not been quite up to the regulations of the State Board. For instance, the hotel, where one case was under treatment, was quarantined on January 7, and about the middle of February it was suspended, and the City Health Officer instructed the proprietor to use *two pounds* of sulphur. The house is three stories high, and this young man was all over the house. This two pounds of sulphur was directed to be burned in the room where the patient was in bed. For another house, of four rooms, he ordered *one pound*. I burned thirty pounds in my house of eight rooms and cellar, washed the wood-work of the sick room, and two bedrooms adjoining, with the corrosive-sublimate solution, and then again in clear water; all the bedsteads and other furniture in the same manner; took all the wall paper off and repapered them; fumigated beds and bedding, and all clothing at least six times, and I don't think I shall have much small-pox left in it; but it is the only house that has been served in that manner.

In regard to ages of persons vaccinated, it is almost impossible, except by making a personal canvass, to ascertain them; also dates of former vaccinations would have to be found in the same manner, and a great many don't know.

Dr. Guibor was here on Saturday, January 12th, and visited the patient at the hotel, and pronounced it to be small-pox; but did not see patient No. 1.

I have written a great deal of irrelevant matter I presume, but all such can be cut out. I have given the facts as near as I possibly can. I think we have the disease "stamped out." The last case is over a week old, and if any others occur, I think it can be charged to insufficient fumigation and disinfection. Should any more cases occur, they will be included in a supplemental report.

#### SUPPLEMENTAL REPORT.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka*—DEAR SIR: In obedience to your instructions, I hand you herewith a history of the variola epidemic in this county during the winter of 1888-89, excepting what is in the 1888 report. It is impossible at present to give a tabulated report, as Dr. Welch has of the epidemic at Wichita, from the fact that many of the persons who have been afflicted with the disease have removed to other localities; others had the varioloid, but in so light a form as to render it uncertain whether they had had it or not.

Fifty-three persons had small-pox, and were of all ages, from an infant six weeks old to adults of nearly seventy years. Out of the whole number of cases, two only were fatal. One, an infant, one of a pair of twins (its mate having died at birth), had been very weakly since birth, and probably would have died in a few weeks, even if there had been no small-pox in the country. The other case was complicated with erysipelas; male, age about 46 years.

The manner of attack of the first case of the disease is given in my annual report for 1888. The remainder had typical symptoms.

Vaccination has proved a very efficient protection against attacks of this disease, as none have had the disease who have been vaccinated (successfully) within twenty years. One or two cases where vaccination was of very remote date, as in early infancy, did not prove effectual. One case where vaccination was performed the day of exposure did not work until after variola had been fully recovered from, and then it worked splendidly.

In nearly every case there was an absence of the severe burning and itching sensations which usually accompany typical cases. The first case was entirely different in its mode of attack from any of the others. The papules became apparently ripe vesicles during the first twenty-four hours, and successive crops were thrown out every day for three or four days, and disappeared nearly as quickly. There was no odor such as arose from subsequent cases, and the sick-room would not have been taken as such except for the patient lying in bed. It is possible that the gonorrhœa modified the course and nature of the attack.

At present the county is entirely free from the disease. One reason of

its spread, and especially in the country, is negligence in fumigating and disinfecting their homes after recovery. Several of the later cases can be attributed to no other cause, that we could determine, but infection from clothing worn by parties in infected houses, and thus conveying it to others.

I have found the following to act splendidly as an application to the skin after the vesicles begin to dry, to allay the burning and itching sensations, although there were but few that required it:

R. Sub. nit. bis.

Gum acacia pulv. aa. dr. ii.

M. fiat chart. No. 6.

Sig.: Mix powder to consistency of thin cream, and apply externally.

To avoid repetition in the reports, I have omitted in this so much as relates to variola.

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### SMALL-POX AT ATCHISON.

BY C. FARRINGTON, M.D., HEALTH OFFICER FOR THE CITY OF ATCHISON.

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The first case appeared February 24, 1889. Mr. Lawrence Brennick, age 26 years, was vaccinated when he was five years old, and again at the age of fifteen. He had been working for the Yates Ice Company of Atchison for the last four years; had been at Kansas City six weeks before he was taken sick, and had one week before returned from Glen Rock, Nebraska, where he had been cutting ice for the company. February 26 I was called to see him, when I learned from him the above facts. The 24th, all day chilly; the 25th, some headache, aching all over, some nausea. On the morning of the 26th was the first time I saw him. About noon of the same day he was sent to the city hospital. At this time his face was flushed; had high fever, headache, limbs and hips ached, nausea, vomiting, sore throat, *backache*. On the morning of the 27th, some papules were appearing on the forehead; same symptoms otherwise as on the previous day. The patient was now isolated; the matron (Miss Smith) and Wm. Randall were only allowed to go into the room. Mr. Randall was being treated by me for conjunctivitis, and volunteered to assist in taking care of patient.

The health board of the city was notified at once of the case, a quarantine established, and the old pest-house ordered repaired so as to remove the patient from the city hospital to it. Just as it was about ready for occupancy it was burned by unknown parties, who it is presumed did not want it so near them. This delayed removing the patient from the city hospital until the new pest-house was completed, when it was deemed unsafe to move the patient from the city hospital. Miss Smith (the matron) and Wm. Randall continued to attend the case until the 27th, when a nurse was secured who had had the disease, after which time no one was allowed in the room except the regular nurse.

The different stages of the disease followed in natural order; mild delirium was present during the nights of the 27th, 28th and 29th; none after that. When pustules were well developed, it gave a very decided case of confluent small-pox.

March 1st, Dr. J. W. Redden, Secretary of the State Board of Health, visited Atchison, and accompanied me to see the patient. He observed that it was a severe case of confluent small-pox, and expressed himself pleased with the management of the case.

There were eight occupants of the city hospital at the time this case went there, and all were promptly vaccinated, and no one took the disease except Wm. Randall, who assisted in nursing the case for two days.

*Second Case.*—Wm. Randall, age 35 years, vaccinated when a boy and so soon as exposed at the hospital, which last took well. On the 10th of March papules began to form on forehead; for two or three days previously had complained of some chilliness, aching all over the body, nausea, headache, sore throat, and some fever. He was at once removed to the pest-house. This was a mild case. The regular stages followed, but no secondary fever appeared, and this proved to be a case of varioloid. Convalescence commenced after the eruption had fully appeared, and continued uninterrupted until he was well.

*Third Case.*—Harry Biddle, age 7 years, was vaccinated one year ago and a fair scar remained. March 11th I was called to see the case. He had some fever, and papules began to form on forehead and some on face. On inquiry I learned that on March 8th, three days before, the boy had been taken with some fever, headache, sore throat and nausea. These symptoms continued more or less marked up to the time I saw him. I at once pronounced the case one of small-pox; but the father, grandfather and grandmother, the other occupants of the house, protested, and said it was not small-pox, and that the child had been attending school up to the time he was taken sick, and had not been exposed.

On inquiry, I ascertained that his father had been at Kansas City, and came home, eleven days before the boy was taken sick, with some eruption on face and body generally, and commenced to sleep in same bed with the boy. I told him he had had small-pox. He said there were four or five physicians at Kansas City who saw him and said it was not small-pox, but did not say what it was. Because of their doubting its being small-pox, I asked them if they desired another physician to see the case, and they said they did. I called Dr. W. W. Campbell, who agreed with me in my diagnosis, and a quarantine was at once established. The case was soon removed to the pest-house on account of three other houses being in such close proximity to this one, three yards having one yard in common. The disease developed in regular form and type, and proved to be one of discrete small-pox. After pustules broke convalescence commenced, and continued until the boy was well.



*Fourth Case.*—Andy Hayes, age 22 years; vaccinated when a boy, but the virus did not work. March 26th, I was called to see him, when I learned the following history: Three days before he commenced to feel badly; headache, nausea and vomiting. He had until this time been acting as guard at the pest-house, and said he had not been exposed to small-pox; but I subsequently learned that about a week before, he had gone up to the pest-house window while it was open, and conversed with inmates. When I first saw him, he had a high fever, some perspiration, full-bounding pulse, a general soreness over the body and limbs, and headache. No one in the house, except himself and mother. I told his mother to isolate him, and allow no one to go into his room. The next morning some characteristic papules had formed on the forehead. I at once reported the case to the Board, and he was removed to the pest-house. His case proved to be a typical confluent case of small-pox. Convalescence followed the breaking-down of the pustules.

*Fifth Case.*—Mildrid Trobridge, age 2½ years. She had been vaccinated one year before and also this spring, but the vaccination virus did not work either time. On March 23 the child was taken with a fever; flushed face. This condition continued until the 25th, when papules began to appear on face. Dr. R. A. Miller was called, and pronounced it chicken-pox. On the next day he visited the case and assured the mother that it was only chicken-pox. The rest of the children, three in number, attended school the 25th, 26th, 27th, 28th and 29th, and the little sister broken out and all the time getting worse. On account of Dr. Miller being taken sick, his partner, Dr. Copp, was called, who said it was not chicken-pox, but did not say what it was. The 29th, Dr. Shelley was called to the case, as was also Dr. Holland. All the physicians then pronounced it small-pox.

In the forenoon of the next day I went to see the case, and found, as stated, a well-marked case of semi-confluent small-pox. The house was at once quarantined, and no one but the nurse allowed in the room with the child. The case passed through all the stages regularly, and began to convalesce as soon as the pustules began to break down, and made a good recovery under the management of Dr. Copp. None of the rest of the family or any who had been exposed took the disease, except the next case, No. 6.

*Sixth Case.*—Nellie McGuire, age 5 years, had been playing with the little Trobridge girl about nine days before the former was taken sick. On the 8th of April I was called to see the child. It had some fever, and all it complained of was pain in the pit of the stomach; there was flushed face and full pulse. It was taken sick on the 7th, and on the 10th papules began to form on the forehead and face; on the 11th, quite well broken out on face and wrists. From this on the case developed regularly, passing through the regular stages, proving to be a case of semi-confluent small-pox. After pustules broke the case began to convalesce, and made a fair recovery.

All cases were kept quarantined for ten days after scabs were all off, during which time the patient took a number of baths in carbolized water. Vaseline allayed the itching and burning the best of anything tried. Vaseline or fresh lard mixed with vegetable charcoal, and applied, served the best in preventing pitting.

Great care is due the Mayor, S. H. Kelsey, Marshal Price, and the efficient police force at their command, in promptly taking such measures as prevented the spread of the disease; also, the careful management of the inmates of the city hospital by the well-directed efforts of the matron, Miss Smith, where eight were quarantined during the sickness of our first case there, and only one took the disease. Miss Shelley, who was nursing the little Trobridge child when it was announced that it had small-pox, continued to nurse the child until it recovered, and she did not take the disease. Such bravery deserves especial notice.

Following I submit a synopsis of the whole number of cases at this place :

Name.	Age, years....	When vaccinated.	First symptoms.	Date of first symptoms...	Date of eruption.....	Form of disease.
Lawr'ce Renwick,	25	{ At the ages of 5 and 15 years..... }	{ Chills, aching all over, headache, nausea, vomiti'g, sore thro't, }	Feb. 24..	Feb. 24..	Confluent.
Wm. Randall.....	35	{ When a small boy, } & soon as exp'd, }	{ Chills, bruised feeling all over, nausea..... }	Mch. 6..	Mch. 10..	Varioloid.
Harry Biddle.....	7	In 1888.....	{ Chills, headache, pain in stomach..... }	Mch. 8..	Mch. 11..	Discrete.
Andy Hayes.....	52	{ When a boy, but did not work.... }	{ Chills, nausea and vomiting..... }	Mch. 23..	Mch. 27..	Confluent.
Mildred Trobridge	2½	{ March 1 and 8, did not work..... }	Fever, flushed face.....	Mch. 23..	Mch. 25..	Semi-conf.
Mary McGuire.....	5	{ In '88, and 2 w'ks before tak'n sick, }	{ Pain in pit of stomach, flushed face, fever... }	Apr. 7..	Apr. 10..	Semi-conf.

NOTE.—All patients were white.

### SMALL-POX IN SCOTT COUNTY.

BY E. NICHOLS, M.D., ATTENDING PHYSICIAN.

GRIGSBY, SCOTT COUNTY, March 18, 1889.

*J. W. Redden, M.D., Topeka*—DEAR SIR: In answer to yours of the 16th, will say that we have had ten cases of small-pox in this county; only one case, that of a child two months old, terminated fatally. The disease was contracted in Pueblo, Colorado, and the party came to Grigsby and was taken down with it in a family of ten; only four of the family took it, and the physician who attended the case at first took the disease and carried it into his family of six, and gave it to all of them. All the cases have recovered, and I do not fear any further spread of it. Four cases were small-pox, six were varioloid; all the cases were white.

Ages: Two, at 40 years; 1, at 30 years; 2, at 15 years; 3, at 13 years; 1, at 2 months; and 1, at 45 years.

When the first case appeared the rest of the family, consisting of nine, were immediately vaccinated. It took on all but two; those two had small-pox, and two of the others had varioloid; the others did not take it.

The physician who attended the case at first, took the disease twelve days after he examined the case; had never been vaccinated before, but at the time he contracted the disease had been vaccinated, and it was working on him finely. He had a bad case. All of his family, consisting of six, took the disease, excepting his wife. First case occurred January 20; last case got well March 1st. Everybody in the township and county was vaccinated.

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#### SMALL-POX IN RAWLINS COUNTY.

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BY J. L. CONSTABLE, M. D., COUNTY HEALTH OFFICER.

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LUDELL, RAWLINS CO., KAS., March 25, 1889.

*J. W. Redden, M. D., Secretary State Board of Health, Topeka, Kansas—*

DEAR DOCTOR: Your favor of recent date at hand, and in reply can say: Miss Rosina Reed is the subject of your inquiry; she contracted the disease called varioloid in Oberlin, Decatur county, Kansas. She was employed at the hotel at the time of the invasion, and the proprietor told her she must get out; that he could not employ her. She then came home to her father, who is a widower, and lives twelve miles northwest of here. He has two daughters, both of whom are generally absent.

As soon as I heard she was sick I visited the family. The girl was alone; said her father called it chicken-pox; she said she came down the ninth day after her exposure; had fever and intense headache three days; rash appeared on face, scalp, etc. With the appearance of the rash the severe symptoms abated, and in one week she was well; said she had not been vaccinated since her recollection. Her father had; but not recently.

As soon as I was informed, I quarantined the house, and directed them to disinfect the house and every article of clothing, bed and furniture, and the infection ceased.

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#### SMALL-POX IN LINN COUNTY.

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BY IRA E. COE, M. D., COUNTY HEALTH OFFICER.

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A. M. McDowell came home from north Missouri about January 25th; broke out with small-pox January 28, 1889. The family of Lincoln McDowell, consisting of self, wife, two-year-old boy, and hired man, all came down together, and broke out about February 9th.

Dr. Rash visited A. M. McDowell January 31st, and L. McDowell's family February 11 and 12. He came down with small-pox, and broke out February 18th. I visited him the 19th, and vaccinated the family, consisting of one girl and three boys. Two boys and the girl had sore arms, and did not take small-pox; the other boy, 8 years old, did not take the vaccination, but came down with small-pox, and broke out about March 14th.

A. M. McDowell had the disease in a confluent form, as did all the McDowell family. Dr. Rash had discrete small-pox, but his son had confluent small-pox.

Mrs. L. McDowell, while at the worst and while entirely delirious (which she was for several days), was confined, and the babe on the fourteenth day after birth had either discrete small-pox or varioloid.

All recovered.

### SMALL-POX IN NORTON COUNTY.

BY E. M. TURNER, M.D., COUNTY HEALTH OFFICER.

*J. W. Redden, M.D., Topeka, Kansas*—DEAR SIR: Please find inclosed report of small-pox. All the cases have recovered. The last case, that of Mr. Sparling, was a nurse taking care of Hyde and the first of the Cobb family. His case was a very mild case of varioloid; was not in bed over four days, and that in the first stages.

You will readily understand that I have got the disease in the "hole," so to speak; that is, it has not spread. Mr. Hyde and Sparling have been discharged to-day; but not until they had been thoroughly scrubbed for a whole week, and had their hair cut close, and put into new clothing, which did not come within thirty rods of the pest-house. I am taking the utmost care to keep it where it is, and think I can do it.

The others will not be discharged for some little time yet.

TABULAR STATEMENT OF SMALL-POX IN NORTON, KANSAS, MAY 31, 1889.

<i>Date of first symptoms...</i>	<i>Name.</i>	<i>Years, age....</i>	<i>Form of disease.</i>	<i>First symptoms.</i>	<i>Date of eruption.....</i>	<i>Vaccination.</i>
April 17	George Hyde.....	24	Discrete.....	Head and backache, fever..	Apr. 20...	Unvaccinated.
May 2	Wetnam Cobb.....	6	Discrete.....	Fever and aching.....	May 6...	Unvaccinated.
May 2	Willie C. Cobb.....	4	Discrete.....	He'd & b'ckache with fever,	May 6...	Unvaccinated.
May 3	George Cobb.....	2	Discrete.....	Chills, fever, pain in head..	May 6...	Unvaccinated.
May 11	Lulie Cobb.....	10 mo.	Discrete.....	Fever.....	May 14...	Unvaccinated.
May 3	William Cobb.....	30	Varioloid ..	.....	May 7...	Vaccinated.
May 6	— Sparling *.....	50	Varioloid ..	Chills, he'dache, light fever,	May 9...	.....

\*Claims to have had small-pox in army.

NOTE.—All patients were white.



## SMALL-POX IN JEFFERSON COUNTY.

BY D. SURBER, M.D., ATTENDING PHYSICIAN.

*J. W. Redden, M. D., Secretary Kansas State Board of Health*—DEAR DOCTOR: I send you a final report of a case of small-pox that dropped in upon the city of Perry on the morning of the 3d day of April. J. H. Thompson, a citizen of Perry, a bricklayer by profession, was at work on the State capitol, at Topeka, where he contracted the disease. Came home to his family, a wife and five children, being broken out with small-pox. This was the third day of the fever, the eruption then showing its intentions very conspicuously. The children were sent away before being exposed. The wife concluded to remain as one of the nurses, and he was taken into one of the rooms of the dwelling-house. His wife reported as soon as daylight that Thompson was at home with small-pox. Soon the news spread to all parts of the village, and great alarm prevailed. The mayor of the city asked me to visit the patient and report at his headquarters soon. This I did. The house was then quarantined; the street of that block was roped and red flags and two guards placed there, one for the day and one for the night. I vaccinated Mrs. Thompson on the arm in three places. Four days after her vaccination it looked like taking, but soon dried up. She had been successfully vaccinated in youth. The patient had been once successfully vaccinated about twenty years ago. This case exhibited the largest crop of pustules of any case of small-pox or varioloid I have ever witnessed. The case exhibited its worst symptoms at night. From the third to the eighth day each night from 9 to 2 o'clock, a paroxysm of increased heat and worried breathing prevailed to a greater or less extent. Temperature 102 to 104; pulse 110 to 120. Feeble heart action during the hot stage. The remainder of the 24 hours comparative rest and quiet prevailed. By the thirteenth day the pustules were well filled. The crusts began to separate and fall off by the sixteenth day, and by the twenty-fourth the surface or skin was clear of all crusts, and but little of branny exudation on the skin present on the twenty-sixth day.

A general cleaning-up of the patient, nurses and rooms was had. Mrs. Thompson has had no symptom of the disease up to the present writing. Her preparatory or preventive course of treatment was: A plain, digestible, nourishing diet; two to three doses each day,  $\frac{1}{2}$  drachm each, of potass. bi-tartrass, and plenty of lemon acid to drink; a thorough sponge bath once a day, of equal parts of water and apple vinegar.

Thompson's treatment from the third day was one-dr. doses of potass. bi-tartrass, three to five times in 24 hours; his entire person sponged every morning with hot water 1 qt., sodæ boras 2 dr.; also, a bath every evening, hot water and apple vinegar in equal parts; and at any time that he complained of itching and burning of the skin he was sponged with warm vin-

egar, which gave him great comfort and quiet immediately. His medicine was:

R. Tr. cinchonæ com., 4 oz.; tr. aconite root, drops 2; digitalis, gr. 1; zinc sulph.,  $\frac{1}{2}$  gr.

Sig.: Dose, teaspoonful every 4 hours.

One-half teaspoonful doses of aromatic spirits of ammonia in lemonade were administered once an hour for five or six hours at night. Cold water and milk were his drink and food. During the day his face was kept well oiled with olive oil. No pits follow. I had him bathe with pure apple vinegar once a day after the crusts fell off until he had a general cleaning-up.

#### SMALL-POX IN LYON COUNTY.

BY J. H. BURKE, M.D., ATTENDING PHYSICIAN.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR SIR: The small-pox at Bushong, in Lyon county, is all over. The schools have been open for some time, and trains are stopping the same as before the epidemic. There were 38 cases in all, and 3 deaths. I was 51 days in attendance.

#### SMALL-POX IN RUSH COUNTY.

BY WM. M. GOODWIN, M.D., COUNTY HEALTH OFFICER.

LA CROSSE, RUSH CO., KANSAS, May 10, 1889.

*J. W. Redden, M.D.*—DEAR SIR: Having rheumatism so that I could not see the case of small-pox at McCracken, I had to depend on the Commissioner who resides there for information in regard to the case. This man came from Colorado; as soon as diagnosed, he was quarantined and properly cared for. I sent your letter to Dr. Dutton, who attended him, both as physician and nurse, and hope to get a reply from him to all your inquiries, but cannot get it there by Thursday.

I will say, however, that had it not been for the law, I think there would have been more cases in that village. One family supposed to have been exposed was compelled to remain at home until all danger was past—for which we are indebted to the law; and I think the large majority in the vicinity of McCracken are satisfied that the prompt measures of the county board prevented a scourge of small-pox.

The following is the substance of Dr. Dutton's reply:

MCCRACKEN, KAS., June 12, 1889.

*Dr. Goodwin*—DEAR SIR: The man's name was W. G. Sartwell, of Minneapolis, Minnesota. He came here from Pueblo, Colorado; he was 33 years of age, and by

trade a railroad engineer; was sick about three weeks. I regard it a mild case of confluent small-pox. It is true, he said he had been vaccinated in childhood, and also about the time he was exposed to it while in the city of Pueblo, Colorado, which was about the period, I conceive, of incubation. He had but little fever after the pustules fairly made their appearance; was broken out thickly all over, even in his hair and bottoms of his feet; only two confluent patches on his body, one on his side about two inches square, and one on the inner side of his left thigh about 4 by 8 inches. His appetite was tolerably good all the time.

After his recovery, he returned to Minneapolis.

### SMALL-POX IN PHILLIPS COUNTY.

BY ISAIAH MILEY, M.D., COUNTY HEALTH OFFICER.

MARVIN, PHILLIPS CO., KAS., April 2, 1889.

*Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kansas*—DEAR DOCTOR: Referring to yours of the 19th ultimo, the case of varioloid which I reported to you originated in Oberlin, by the subject happening to be in a room with a man who came direct from the bedside of his son, who was suffering with variola. This occurred about the 7th of January. On the 19th of January I was called to see the subject of this report. His statement was that he had been exposed to small-pox at Oberlin about twelve days previous to his illness, and as described above. He was suffering from severe headache, nausea, and pain in the lumbar region. He also called attention to a cord-like feeling under the skin in his temples, saying, "I never had any such feelings before, and believe I have the small-pox." He was born in New York; aged 56 years; vaccinated first and last in 1864.

On the 20th a typical vesicle appeared on the dorsal surface of the metacarpal joint of his left thumb, and one on his upper lip. On the morning of the 21st the vesicles had lost their vesicular appearance and become papular, and the patient said he felt as well as ever. After this he took a number of ablutions, adding a portion of listerine to the water; and on the 29th of January he started across the prairie in a carriage for home.

There were but two occupants of the dwelling where this patient had stopped. One had had variola; the other was vaccinated about the same time that the patient was; this one I revaccinated.

I placed a vessel of water upon the stove, to which fl. ex. eucalyptus globus was added from time to time, and no direct communication was allowed between the occupants of the house and anyone outside. I ceased my professional calls as soon as the vesicles aborted.

On the departure of the patient, the house was fumigated and aired, recarpeted, repapered, and painted. The house was from the first flagged, as directed by the State Board.

No other case has occurred that would cast the slightest shadow of suspicion upon any factor of the above case as being its origin.

## SMALL-POX IN HARVEY COUNTY.

BY T. M. COLEMAN, M. D., COUNTY HEALTH OFFICER.

NEWTON, KANSAS, May 4, 1889.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: Yours of the 3d inst. just received, and in reply will say: About February 24th, a commercial traveler who lives here came home from Colorado, and visited his family about a week. On March 3d he came to my office, when I noticed a pimple on his face; on examination I discovered he had had varioloid. He left that same evening for Portland, Oregon. I went to the house, had the family clean the house, and disinfected it; the wife, having an infant a few weeks old, did not go out or receive company. On March 26th his little boy (whom I had vaccinated ten days before) was taken sick, with constipation as the first symptom; it was eight days before we could get a passage. During this time there was no eruption in the throat nor on the body. After the child (a boy five years old) had a stool, the eruption appeared. The next day a little boy in an adjoining house began to break out. I had cards put up and the families isolated as much as possible. In these two families there have been five cases. In another family, who had done washing for the first one, there are two cases. These cases are all well or nearly so; none were confluent. One was an infant about two months old.

Some ten days ago (I have no date of these cases) a railroad man came home from New Mexico with it; eruption out when he came. He lives in another part of the town. He was immediately properly quarantined, and is doing well. An old gentleman was taken down about a week ago; came to my knowledge yesterday in another part of town. Contracted from the first family. He is said to be doing very well.

These cases were attended, the first ones by myself, then by Dr. McKee until he was taken sick, then by Dr. Baer. These cases are all very mild, needing but little treatment. There appears but little danger of its spreading.

I will write you again in a few days if you desire, and let you know about these cases, and will inform you of any new ones.

## SMALL-POX IN BROWN COUNTY.

BY W. W. NYE, M. D., COUNTY HEALTH OFFICER.

HIAWATHA, BROWN CO., KAS., June 1, 1889.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: On the 19th day of February, information reached me that an eruptive disease was prevailing in the northern portion of Brown county, including the



town of Reserve and vicinity. Hearsay opinions differed, some declaring it to be chicken-pox, others small-pox. The information came to me in an indirect manner, not being reported as required by State and local boards of health. -

On the 20th of February I visited Reserve and vicinity for the purpose of investigating, and if possible deciding the nature of the disease in question. In my opinion they were well-marked cases of small-pox and varioloid. Visited ten cases, including mild and severe ones, in order to satisfy public opinion, as there had been differences expressed as to the nature of the disease, the cause for which the following report will explain.

The result of my investigation was immediately telegraphed to Dr. J. W. Redden, Secretary State Board of Health, also to Dr. L. R. Yates, Mayor of Hiawatha, who at once ordered a quarantine against the infected district, which remained in force until the 20th of March.

The disease was brought to Reserve from Maryville, Missouri, by the wife of Dr. J. S. Taylor. The Doctor relates the following as the origin of the small-pox in Reserve:

"My wife was taken sick on the 21st of January, with chills and some fever, and the symptoms were closely allied to those of typhoid fever—swelling of the abdomen, tympanitis, gurgling in the right iliac fossa, constipation, and gradual rise in temperature. I was almost confident it was typhoid fever, until the appearance of the eruption, and then she told me she had been exposed to chicken-pox on January 1st, in Maryville, Mo. I thought nothing of it until Mr. Walker and Miss Miller were broken out. Miss Miller worked for us during my wife's sickness, and she was the only one who contracted the disease from being exposed in my house. The others contracted the disease, I think, from my clothes. When I say others, I mean Mr. Walker, Wm. Robinson, Arthur Beauregard, and Mr. Perkins."

When I visited Reserve the above parties had all been exposed, and were at the time sick with small-pox, with the exception of Mrs. Dr. Taylor, who was well, and attending to her household duties. During the time that elapsed from the 21st of January until the 20th of February, the community had been using no precautions to prevent the spread of an infectious disease. Schools had been in session, revival meetings were being held, and the usual freedom of communication and personal intercourse were indulged in. During the meantime, two physicians from Fall City, Nebraska, one of whom was Dr. Newkirk, had been called into the vicinity, and pronounced the disease small-pox; also photographed some cases. Dr. Taylor, of Reserve, about this time became convinced as to the nature of the disease. Schools were closed, and gatherings of a public nature discontinued. Trains were ordered not to stop, and it seemed as though the town and vicinity, as was expressed by one citizen, was "destined to become one vast hospital;" and it was, in fact, when it is considered that in a small town through this exposure at least eighty persons were taken sick with small-pox in its confluent or mild type.

Instructions were given the citizens to flag or rather print in plain letters

the word "Small-Pox," and display it upon the front door of every infected dwelling. Printed matter, such as furnished by the State Board of Health, was placed in the hands of the attending physician and others, to guide them in the management of the disease. Vaccination was performed, and other methods of precautions used in the way of disinfection, etc. Isolation of the sick under the existing circumstances was thought impracticable; no suitable house could be procured to use for the purpose, and in many instances the sick were in the country and several miles apart.

Dr. J. W. Redden, Secretary of the State Board of Health, made a tour of inspection, and indorsed what was being done in the way of quarantine and protection, gave valuable advice as to further management, and acquainted himself with the condition of affairs.

Credit is due the County Commissioners, who acted in sympathy with all rules and regulations to prevent its further spread. Also to Mayor L. R. Yates, of Hiawatha, who recognized the importance of confining the small-pox to the infected district, and did all in his power to prevent its spread. The mayors of Hamlin, Morrill and neighboring towns deserve credit for their prompt action in ordering a quarantine.

Vaccination was quite generally performed throughout the county; pupils were excluded from the public schools until they could show evidence of previous or recent vaccination.

Am not able to give a history of each case, and probably it is unnecessary. Will note two or three cases in particular, as they were reported more in detail; the remainder will be given in a tabulated form appended to this report.

Mr. E. Burchfield's child, less than one month old, had confluent small-pox, and died on the ninth day of the disease.

Mrs. Albert Kennedy, aged 36 years, was taken sick on or about the 20th of February; was sick about fifteen days before the eruption appeared; was threatened with miscarriage at the beginning of her sickness, but by the use of opium, the pains were controlled and miscarriage prevented. She died in the pustular stage of the disease. Her case was somewhat complicated—had lung trouble of a chronic nature at the time she was taken sick with small-pox.

Mr. Baker's child, 3 years old, had confluent small-pox; the first symptom was a spasm. Died on the tenth day, just as the pustules began to fill.

Mrs. E. H. McFadden, aged 36 years; discrete form; five months advanced in pregnancy; passed through the disease without any symptoms of a miscarriage; had been successfully vaccinated.

There were in all 80 cases; 8 of this number had no physician in attendance; 10 were confluent; 1 of the 10 claims to have had small-pox before; 9 of the confluent form had never been vaccinated, and 1 unsuccessfully. There were 70 cases of the discrete form; of this number, 45 had been vaccinated; 25 never or unsuccessfully vaccinated. All were white.

## SMALL-POX IN BROWN COUNTY.

Date of first symptoms.....	Name.	Age, years.....	Form of disease.	First symptoms.	Date of eruption.....	Vaccination.
Jan. 21	Mrs. J. S. Taylor.....	20	Discrete.....	Chills and febrile symptoms...	Jan. 24.	Unvac.
Feb. 12	Wm. Robinson.....	21	Discrete.....	Vomiting, chills, backache....	Feb. 15.	Unvac.
Feb. 12	S. B. Walker.....	24	Nearly conf..	Vomiting, pain in bowels and back.....	Feb. 16.	Unvac.
Feb. 10	Bert Gould.....	18	Confluent.....	Sore throat, pain in back.....	Feb. 16.	Unvac.
Mar. 1	Mrs. J. P. Gould....	48	Discrete.....	Headache and chills.....	Mar. 3.	Vaccinated.
Mar. 2	Miss Gould.....	18	Discrete.....	Headache, sore throat.....	Mar. 5.	Vaccinated.
Mar. 1	Mr. E. Gould.....	24	Discrete.....	Pain in breast.....	Mar. 4.	Vaccinated.
Mar. 3	Gould's child (fem.)	3	Discrete.....	No complaint; played in bed,	Mar. 5.	Vaccinated.
Feb. 11	Arth. Beauregard....	18	Confluent.....	Headache, vomiting.....	Feb. 14.	Unvac.
Feb. 14	John Beauregard....	42	Discrete.....	Headache, constipation.....	Feb. 17.	Vaccinated.
Feb. 18	Mart Wells.....	28	Discrete.....	Headache.....	Feb. 21.	Vaccinated.
Mar. 1	Mrs. Wells.....	22	Discrete.....	Headache and vomiting.....	Mar. 4.	Unsuc. vac.
Mar. 1	Mrs. Wells's child..	1	Discrete.....	Sore mouth and throat.....	Mar. 4.	Vaccinated.
Feb. 19	Ed. Jacques.....	18	Discrete.....	Headache, pain in back.....	Feb. 21.	Unvac.
Mar. 1	John Syster.....	29	Discrete.....	Headache, pain in back.....	Mar. 4.	Vaccinated.
Mar. 2	John Robinson.....	23	Discrete.....	Headache, pain in back.....	Mar. 5.	Vaccinated.
Mar. 1	Lee Robinson.....	19	Discrete.....	Headache, backache.....	Mar. 4.	Vaccinated.
Mar. 3	Miss Robinson.....	16	Discrete.....	Headache, backache.....	Mar. 7.	Vaccinated.
Feb. 28	Mrs. H. H. Robins'n,	42	Discrete.....	Headache and vomiting.....	Mar. 3.	Unvac.
Feb. 28	B. W. Baker.....	29	Discrete.....	Headache and vomiting.....	Mar. 3.	Unvac.
Mar. 5	Mrs. Baker.....	26	Discrete.....	Headache and vomiting.....	Mar. 9.	Vaccinated.
Mar. 9	Loid Baker*.....	3	Confluent.....	Spasms and vomiting.....	Mar. 12.	Unvac.
Feb. 22	Mr. I. Willey.....	26	Discrete.....	Head and backache, vomiting,	Feb. 25.	Vaccinated.
Feb. 18	Mrs. Collins.....	35	Discrete.....	Pain in chest.....	Feb. 21.	Vaccinated.
Feb. 26	James Collins.....	10	Discrete.....	Head and backache, vomiting,	Feb. 29.	Unvac.
Feb. 25	Belle Collins.....	16	Discrete.....	Head and backache, vomiting,	Feb. 28.	Unvac.
Feb. 27	Ollie Collins.....	8	Discrete.....	Head and backache, vomiting,	Mar. 1.	Unvac.
Feb. 18	Louis Haas.....	18	Confluent.....	Head and backache, vomiting,	Feb. 23.	Unvac.
Feb. 14	L. D. Burchfield....	28	Discrete.....	Headache, kidney trouble.....	Feb. 17.	Vaccinated.
Mar. 5	Lilly Burchfield †..	1mo	Confluent.....	Vomiting.....	Mar. 10.	Unvac.
Feb. 16	Will Calvin.....	8	Discrete.....	Vomiting.....	Feb. 19.	Unvac.
Mar. 1	James Elkins.....	12	Discrete.....	Spasms and vomiting.....	Mar. 4.	Unsuc. vac.
Feb. 26	Mrs. A. Kennedy †..	36	Confluent.....	Uterine pains and vomiting...	Mar. 3.	Unsuc. vac.
Feb. 20	Willie Jones.....	10	Discrete.....	Head and backache, cough...	Feb. 23.	Unvac.
Mar. 1	Thomas Jones.....	42	Conf. & black,	Severe head and backache....	Mar. 6.	Unvac.
Mar. 2	Mrs. Thos. Jones....	40	Discrete.....	Headache.....	Mar. 5.	Vaccinated.
Mar. 3	Louisa Jones.....	16	Discrete.....	Vomiting and backache.....	Mar. 6.	Vaccinated.
Mar. 3	Thomas Jones.....	12	Discrete.....	Backache and vomiting.....	Mar. 6.	Vaccinated.
Mar. 4	Dick Jones.....	13	Discrete.....	Backache and vomiting.....	Mar. 7.	Vaccinated.
Mar. 2	Jones's child.....	1½	Discrete.....	Vomiting.....	Mar. 4.	Vaccinated.
Mar. 3	Jones's child.....	3	Discrete.....	Vomiting.....	Mar. 6.	Vaccinated.
Feb. 22	Geo. Anderson.....	28	Confluent.....	Vomiting and backache.....	Feb. 25.	Unvac.
Mar. —	Anderson's family? ..	—	—	—	—	—
Mar. 1	Andy Beauregard..	36	Discrete.....	Backache and vomiting.....	Mar. 3.	Vaccinated.
Mar. 2	Mrs. Beauregard....	28	Discrete.....	Backache and vomiting.....	Mar. 5.	Unvac.
Mar. 3	Miss Beauregard....	6	Discrete.....	Backache and vomiting.....	Mar. 6.	Vaccinated.
Mar. 3	Ed. Beauregard....	4	Discrete.....	Backache and vomiting.....	Mar. 6.	Vaccinated.
Feb. 20	Mrs. Sue Curley....	26	Discrete.....	Vomiting and sore throat.....	Feb. 23.	Vaccinated.
Feb. 21	J. W. Hawkins.....	28	Confluent.....	Vomiting and sore throat.....	Feb. 24.	Unvac.
Mar. 15	Hawkins's child....	1mo	Discrete.....	No special symptoms.....	Mar. 18.	Vaccinated.
Mar. 16	Hawkins's child....	3	Discrete.....	Spasms, high temperature....	Mar. 20.	Unvac.
Feb. 22	H. McWilliams.....	24	Discrete.....	Pain in chest.....	Feb. 26.	Vaccinated.
Feb. 28	Mrs. McWilliams....	22	Discrete.....	Vomiting, general aching.....	Mar. 2.	Unvac.
Feb. 12	Miss A. Miller.....	19	Discrete.....	Vomiting and backache.....	Feb. 15.	Unvac.
Mar. 1	Henry Miller.....	16	Discrete.....	Vomiting and backache.....	Mar. 3.	Unvac.
Mar. 3	Lon Miller.....	14	Discrete.....	Vomiting and backache.....	Mar. 6.	Vaccinated.
Mar. 4	Willie Miller.....	12	Discrete.....	Vomiting and headache.....	Mar. 7.	Vaccinated.
Mar. 4	Hod Miller.....	10	Discrete.....	Vomiting and headache.....	Mar. 7.	Vaccinated.
Mar. 6	Ed. Miller.....	8	Discrete.....	No complaint.....	Mar. 9.	Vaccinated.
Mar. 2	Jno. McWilliams....	46	Discrete.....	Headache.....	Mar. 5.	Vaccinated.
Mar. 3	Fra'k McWilliams..	18	Discrete.....	Headache.....	Mar. 6.	Vaccinated.
Feb. 8	Alex. Perkins.....	32	Conf. on face,	Headache, sore throat.....	Feb. 11.	Unvac.
Feb. 22	Perkins's child.....	1½	Discrete.....	Spasms and sore throat.....	Feb. 22.	Unvac.
Feb. 28	Mattie Gillespie....	18	Discrete.....	Headache and vomiting.....	Feb. 29.	Unvac.
Feb. 28	John Wilson.....	30	Discrete.....	Head and backache.....	Mar. 2.	Unvac.
Mar. 12	Wilson's child.....	2	Discrete.....	Vomiting.....	Mar. 15.	Unvac.
Feb. 28	Mrs. Wilson.....	38	Discrete.....	Head and backache.....	Mar. 2.	Vaccinated.
Feb. 25	Geo. Jackson.....	14	Discrete.....	Head and backache.....	Feb. 28.	Unvac.
Mar. 14	James Jackson.....	16	Discrete.....	Headache and vomiting.....	Mar. 17.	Unvac.
Mar. 15	Frank Jackson.....	12	Discrete.....	Headache and vomiting.....	Mar. 18.	Unvac.
Mar. 15	Unknown name.....	10	Discrete.....	Spasms.....	Mar. 18.	Unvac.
Mar. 16	Sarah Jackson.....	11	Discrete.....	Head and backache.....	Mar. 20.	Unvac.
Mar. 17	Carrie Jackson.....	18	Discrete.....	Headache and vomiting.....	Mar. 24.	Unvac.
Mar. 21	Mrs. McFadden.....	26	Discrete.....	Headache and vomiting.....	Mar. 24.	Unvac.

\*Died March 20. †Died March 12. ‡Died. §Second attack of disease.

¶Eight more were sick with varioloid. No physician needed.

## SMALL-POX IN MORRIS COUNTY.

BY J. B. SHOWERS, M.D., ATTENDING PHYSICIAN.

DUNLAP, MORRIS CO., KAS., April 12, 1889.

*J. W. Redden, M.D., Topeka*—DEAR DOCTOR: Yours received and noted. We have had six cases of small-pox in Dunlap, originating from a case that broke out at Bushong. These men were working in a stone quarry at the mine when the small-pox broke out there, then came home here. The first case was quarantined here, and two men appointed to take care of him. One man had had the varioloid, the other nurse was only vaccinated; neither of them took it. The next one taken down was John Tally, negro. He had not been vaccinated, and died on the eleventh day from the time he was taken sick. He had venereal disease, which made it worse, in my judgment.

There are four cases now in my charge, and all are doing well; have used all precautions to prevent any further spread, and am satisfied that it will soon end. Treatment consisted of light diet, and cooling laxatives, such as cream tartar, nitr. pot., mag. sulph.; in last stages, quinine and iron, lotion of sweet oil.

Never saw small-pox affect the throat and eyes as this did; have attended quite a good many cases before, but never saw cases break out as these did. Instead of the pustules forming on the end of the vesicles, they formed under the same.

## SMALL-POX IN GEARY COUNTY.

BY GEO. E. HARVEY, M.D., CITY HEALTH OFFICER.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kansas*—DEAR SIR: In response to your letter of the 11th inst., asking for a full and complete report of each case of varioloid and small-pox in our city during the recent visitation of that disease, I submit the following.

On the 9th of January last Mrs. L., from Williams, Arizona, arrived in this city on a visit to her sister, Mrs. B., whose household consisted of her mother, her children, a hired girl, Miss Tillie A., and a hired man, James B. On January 19th Mrs. L. was taken sick, and Dr. N., her brother-in-law, was called in and treated her until January 22, when an eruption appeared, and he called it chicken-pox. On January 30, her mother, already sixty years old, was taken sick with what she supposed was chills, and took quinine; but on February 2d an eruption appeared, when Dr. N. called this case chicken-pox.

Small-pox being but twenty-five miles distant from us in two different directions, the people were thoroughly aroused as to the danger from it;



and when the case of this lady sixty years old was pronounced chicken-pox, it caused so much talk and comment upon the street that when the Board of Education met in regular session on February 4th the members voted unanimously to quarantine against the family of Mrs. B. This so incensed the attending physician that he flew into the newspaper resentfully; he also called in the health officer, Dr. D., who gave to the Board of Education a certificate that the cases were chicken-pox. The Board of Education, however, maintained their quarantine, and thus matters stood for about two weeks.

On Friday, February 8, Tillie A. complained of being tired, worn out, etc. On Sunday she broke out; on Monday was about the house. On Thursday she rode to the depot in a carriage, took the cars to Alida, seven miles, where she alighted, and a young gentleman and lady took her in a buggy to the home of her parents, three miles distant, and into Dickinson county. The disease broke out in this family February 26.

On February 15, the health officer, Dr. D., who visited Mrs. O. on the 6th and Mrs. L. during her sickness, took sick, and broke out on the 18th, and the attending physician, Dr. N., called it a case of chicken-pox. But the addition of another person, a man 55 years old, to the list of cases of so-called chicken-pox, was more than the community would stand; so there was another physician called in, and the two called his a case of genuine small-pox on February 22, the eighth day of the disease.

On February 17, James B., Mrs. B.'s hired man, took sick, and Dr. N. first called his case one of rheumatism, which satisfied Mr. B.; but when on the 20th the eruption came out, and Dr. N. wanted to call it a case of chicken-pox, he objected, and insisted that he had had the latter disease no longer ago than one year before. However, Dr. N. insisted that his diagnosis was correct. On February 21 the Board of Education made an order for three physicians to go to Mrs. B.'s and determine what the disease was, but they were refused admittance; and being powerless to enforce their order, the Council was appealed to, which body on the 23d made an order for an investigation at one o'clock P. M.; but before the hour arrived, Dr. N. came and reported the case of James B. as a case of small-pox, and that the family were willing to be quarantined. This made an investigation unnecessary.

At this juncture your humble servant was made City Health Officer, and the outlook was truly unpromising. The disease had been in Mrs. B.'s house for 30 days; visitors had come and gone; a colored woman had done family washing at Mrs. B.'s regularly every week; some of Dr. D.'s friends had called upon him.

On the 24th of February a man by the name of William Goodman, who claimed to have had the varioloid and to have nursed small-pox patients, came to nurse James B. On the 8th of March he took sick, and on the 11th the eruption appeared.

On February 27, Anna A., hired girl in the family of Mr. T., and sister to Tillie A., who had visited back and forth with her sister, was taken sick; and upon being told that her symptoms were premonitory of small-pox, she asked that she be taken to the home of her parents, a distance of eleven miles, where she knew they already had the disease. Accordingly, she was comfortably and properly removed to her home, where she developed a case of discrete, very nearly confluent, small-pox.

The means made use of to stamp out the disease were strict quarantine, vaccination, and fumigation; flags were used at houses where the disease existed, and at one house where it never developed, but a marked exposure. The colored washwoman, and the young lady and gentleman who took Tillie A. to her home, were each quarantined twenty-one days from the time of exposure; the houses and patients all quarantined according to the rules laid down by the State Board of Health. But one case developed after the quarantine was established, and that was only four days afterward.

There were in all seven cases, three males and four females, all of the white race, and all recovered.

<i>Date of first symptoms.....</i>	<i>Name.</i>	<i>Age, years.....</i>	<i>Form of disease.</i>	<i>First symptoms.</i>	<i>Date of emption.....</i>	<i>When vaccinated.</i>
Jan. 19	Mrs. L....	23	Varioloid .....	Fever and pain in limbs.....	Jan. 22..	{ At the age of 5 years; fair scar.
Jan. 30	Mrs. O....	60	Varioloid .....	{ Chilliness, pain in head } { and limbs..... }	Feb. 2..	{ At the age of 5 years; scar very small.
Feb. 8	Tillie A.	21	Mild vario'd,	{ A tired, wornout feeling; } { wanted to lie down..... }	Feb. 10..	When small.
Feb. 15	Dr. D.....	55	Discrete.....	{ Fever, aching of head and } { bones, especially back... }	Feb. 18..	{ If at all, when very small; no scar.
Feb. 17	James B.	23	Discrete.....	{ High fever, with aching of } { every limb in body..... }	Feb. 20..	Never successfully.
Feb. 27	Anna A..	14	Nearly conf..	{ Fever, headache, severe } { pains in back, with sore } { throat and nausea..... }	Mch. 2..	Never.
Mch. 8	Wm. G....	45	Mild vario'd,	{ Fever, sensation of being } { tired and worn out..... }	Mch. 10..	{ Many years ago; claims } { to have had varioloid.

NOTE.—All patients were white.

### SMALL-POX IN GREENWOOD COUNTY.

BY A. F. HIGGINS, M.D., COUNTY HEALTH OFFICER.

EUREKA, KANSAS, June 12, 1889.

*Hon. Secretary State Board of Health, Topeka, Kansas*—DEAR SIR: Inclosed please find report of small-pox in our county, at Reece and Eureka; in all 21 cases. The disease was brought to Reece by a young man named Jacob Abbott, who came from Arizona January 10th, stopped at a boarding-house in Reece kept by a family named Landers; was taken sick with small-pox, and had a severe case in the confluent form. During Jacob Abbott's

sickness, he was visited by his brother's family on Spring creek, who contracted the disease and communicated it to his whole family. The entire family of Landers, with the exception of the father, was sick with it.

During this epidemic, measles was quite prevalent. A child of Mr. Irons (Effie, aged 12 weeks) was just recovering from an attack of measles, when attacked with small-pox, and not being able to withstand the virulence of the poison, died. This is the only case out of 22 that did not recover.

After a period of two weeks, after the last scabs came off, the houses, furniture and clothing were thoroughly disinfected, and the people turned out. The authorities at Reece deserve praise for their attention to the sick, and their diligence in helping to stamp out the disease.

The old gentleman, Swagerty, who had it here exposed himself by allowing his wife to come home after she had nursed a case of small-pox, supposing it to be measles.

During the entire epidemic none of the cases, excepting two in Mr. Irons's, and one in Mr. White's families, were considered sick enough to have medicine. I recommended glycerine, cream, cosmoline, charcoal and lard to be applied all over the surface after puncturing the pustules to prevent pitting. In a few of the cases, pitting was quite extensive. There were none of the patients removed from their homes during the attack. In all cases strict quarantine was instituted and maintained during the entire time.

## SMALL-POX AT REECE IN 1889.

<i>Date of first symptoms...</i>	<i>Name.</i>	<i>Age, years...</i>	<i>Form of disease.</i>	<i>First symptoms.</i>	<i>Date of eruption...</i>	<i>Vaccination.</i>
Jan. 18	Jacob Abbott....	30	Confluent.....	Pain in head, limbs, sore throat,	Jan. 29..	Unvac.
Feb. 2	Mary Landers...	18	Confluent.....	Headache, pain in limbs and back .....	Feb. 10..	Unvac.
Feb. 3	Mrs. O. Landers,	50	Discrete.....	Slight head & backache, nausea,	Feb. 12..	Unvac.
Feb. 3	Eliza Landers...	16	Discrete.....	Slight head and backache.....	Feb. 11..	Unvac.
Feb. 3	Oscar Landers...	14	Confluent.....	Severe headache, pain in epigastrium, nausea.....	Feb. 12..	Unvac.
Feb. 6	Frank Abbott....	24	Confluent.....	Severe pain in head and limbs..	Feb. 18..	Unvac.
Feb. 14	Maggie Abbott*	17	Confluent.....	.....	Feb. 28..	Unvac.
.....	Harris'n Abbott	4d	Confluent.....	Fever and restlessness.....	.....	Unvac.
Feb. 14	Bert Abbott.....	13	Confluent.....	No disturbance.....	.....	Vaccinated.
Feb. 16	Hattie White....	7	Confluent.....	Very sick, high fever, delirium..	Feb. 25..	Unvac.
Feb. 14	Maud White.....	4	Discrete.....	Slight headache and fever.....	Feb. 24..	Unvac.
Feb. 13	Mrs. M. White....	25	Varioloid, mild,	Slight disturbance of system.....	.....	Vaccinated.
Feb. 13	W. J. White.....	32	Varioloid, light,	No disturbance of system.....	.....	Vaccinated.
Feb. 21	Nora Preston....	19	Discrete.....	Headache and fever.....	Mar. 2..	Unvac.
Feb. 20	Mayor Preston..	60	Varioloid, light,	No symptoms.....	.....	Vaccinated.
Feb. 21	Mrs. Preston....	54	Varioloid, light,	No symptoms.....	.....	Vaccinated.
Mar. 1	Pearl Irons.....	3	Confluent.....	Head and limbs ached, nausea..	Mar. 12..	Unvac.
Mar. 13	S. Irons.....	8	Confluent.....	Headache, chest sore, vomit, high fever.....	Mar. 25..	Unvac.
Mar. 13	Mrs. J. Irons....	32	Varioloid, mild,	No disturbance of system.....	Mar. 26..	Vaccinated.
Feb. 13	Jacob Irons.....	36	Varioloid, mild,	No symptoms.....	.....	Vaccinated.
Mar. 12	Effie Irons†.....	12w	Conf., malign't.	High fever, del'm, retrocession,	Mar. 24..	Unvac.

## AT EUREKA.

April 6	B. Swagerty.....	62	Confluent.....	Headache, vomit, diarrhœa, delirium.....	Apr. 14..	Unvac.
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\* During most critical time gave birth to a child. † Died.

NOTE.—All patients were white.

## SMALL-POX IN WOODSON COUNTY.

BY H. D. HILL, M.D., AUGUSTA, MEMBER STATE BOARD OF HEALTH.

AUGUSTA, KANSAS, July 19, 1889.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kansas—*

DEAR DOCTOR: In conformity with your telegram of the 16th inst., directing me to go to Piqua, Woodson county, Kansas, and investigate small-pox, I took the train the same evening, and arrived at the town designated the day following at about 3 o'clock P.M.

Piqua is a small village situated at a junction of the Mo. P. and Ft. S. W. & W. Rlds., consisting of from one hundred and fifty to two hundred inhabitants. Quarantine had been established by order of the Board of Health of Woodson county, and Dr. J. L. Jones placed in charge as local medical director, who was using every effort in his power to prevent communication between those who were supposed to have been exposed to small-pox and those who were not; but for reasons not necessary to mention, with only partial success.

Dr. Jones having gone to Yates Center on the day of my arrival to confer with the health authorities, I contented myself with looking over the ground and listening to the history of the disease in their midst, as viewed by the laymen, which was unique, and withal profitable.

I found that there had been for some weeks an infectious disease present among the people, as to the character of which there was great difference of opinion, caused by the difference of opinion which sometimes unfortunately occurs among medical men; the disease found here having been pronounced by reputable physicians chicken-pox, both at Fort Scott and Piqua, which opinion caused dissension among the people, and a spirit of complaint against the legal authorities, and chafing under the necessary restraint.

On the morning of the 17th, in company with Dr. Jones, I visited every case, either sick or convalescent with the disease, and made as thorough an examination as was in my power, resulting as follows; in this subjoined report, giving items which seemed to me to be the most important.

After examining these cases, I cannot help but pronounce the disease to be variola, fortunately of a mild type, the general symptoms greatly aiding in making up a diagnosis. I believe every case complained of intense headache, excruciating pains in the back, high fever for from four to six days, then the eruption; in most cases, vomiting. The eruption in No. 4 was papular and vesicular combined; No. 19 had the shot-like feeling under the skin of the forehead; in cases Nos. 16, 15 and 14, the characteristic pittings had commenced, and were so deep as to cause the tissue to appear white-colored (these cases were colored persons); in case No. 11, the pitting was as deep and well marked as in any case I have ever seen. I heard of no case in which the eruption appeared earlier than 48 hours after the first symp-



toms were noticed. To sum up, the symptoms were 12 to 14 days of incubation, severe headache, pain in back, high fever, in some cases delirium, vomiting, thirst, coated tongue; these symptoms lasting from 48 to 72 hours, when a rash appeared; first papular, then vesicular, then pustular; pustules characterized by base being below the cuticle; the pustules were filled with pus of a whitish-gray color, hard at the base. The eruption in all cases following an orderly course described above, ending in umbilication and desiccation; the vesicles had the characteristic two chambers. All the cases up to this time have gone on favorably, no death having occurred. I think this fortunate condition may be accounted for from the fact that the eruption came out well, extremely profuse, and very large and well filled; fever abated soon after the eruption appeared. All were in the discrete form except Nos. 16 and 17, which were partially confluent.

The disease was contracted in Fort Scott by the little boy, Lester Ashen, in April, and all the other cases proceeded from him.

The history of this outbreak shows the necessity of correct differentiation of diseases so different in effect and usual termination. On the 17th day of July, I issued a proclamation declaring the quarantine continued, ordering perfect isolation, and recommending a pest-house, leaving Dr. Jones in charge.

I submit the following tabulated statement of all the cases referred to in the above report:

Name.	Age, years....	When exposed.	Vaccination.	Date of first symptoms....	Remarks.
H. B. Roback.....	19	July 1..	Vac. July 13, '89.	July 14..	Excrutiating pain in back, with fever.
Pernelia Kidney....	8	July 3..	Unvaccinated..	July 13..	Pustules well filled; discrete.
Louisa Kidney.....	22	July 6..	Unvaccinated..	July 13..	Pustules vesicular; discrete, large.
Tillie Kidney.....	17	July 6..	Unvaccinated..	July 15..	Pustules vesicular, large; discrete.
Newton Kidney.....	12	July 6..	Unvaccinated..	July 15..	Pustules vesicular, large; discrete.
Edward Kidney.....	.....	July 6..	Unvaccinated..	July 15..	Pustules large, 2 chambers; discrete.
John Kidney.....	58	July 6..	Unvaccinated..	July 15..	Pustules umbilicated.
Florence Kidney....	11 mo.	July 6..	Unvaccinated..	July 15..	Pustules drying up, crusts showing.
Mrs. Kidney.....	.....	July 6..	Vaccinated.....	July 15..	.....
Ray Ashen.....	4	April 28..	Unvaccinated..	May 10..	Some crusts remaining.
Lester Ashen.....	7	June 15..	Unvaccinated..	July 1..	Some crusts remaining.
Earnest Ashen.....	10	June 15..	Unvaccinated..	July 1..	Well-marked pitting.
Earl Ashen.....	5 mo.	June 15..	Unvaccinated..	July 1..	Pitting not deep.
Gertrude Ashen.....	12	June 15..	Vaccinated.....	.....	Has a well-marked scar, and has felt no bad symptoms at any time.
Jacob Ashen.....	.....	July 1..	Unvaccinated..	July 14..	Rash vesicular.
Esther Stewart*.....	.....	June 11..	Unvaccinated..	.....	Rash dying away.
Walter Stewart*.....	3	June 9..	Unvaccinated..	.....	Convalescent; incrustated.
Mary Stewart*.....	24	June 15..	Unvaccinated..	June 29..	Pustules umbilicated.
Eli Stewart*.....	28	June 15..	Unvaccinated..	June 29..	Pustules large and full.
Julia Stephens.....	4	June 15..	Unvaccinated..	.....	Rash vesicular and pustular.
Job Kollen.....	8	July 1..	Unvaccinated..	July 13..	Rash papular, fever, headache.
Willie Sickey.....	.....	.....	Unvaccinated..	July 13..	Rash papular, fever, headache.

\* Colored.

NOTE.—Two other cases visited which were down or bad with fever, backache and headache, but no rash.

## SMALL-POX IN COWLEY COUNTY.

BY GEORGE EMBERSON, M.D., COUNTY HEALTH OFFICER.

WINFIELD, KANSAS, May 9, 1889.

*J. W. Redden, M.D., Topeka, Kansas*—DEAR DOCTOR: I write to inform you that there are two cases (and probably more) of small-pox at Arkansas City; also one case in the country about six miles northwest of Arkansas City. The last-mentioned case was contracted at Arkansas City, from a man in the employ of the A. T. & S. F. R. R. Co. The first case was overlooked, and it may be possible that more of it will follow. I have taken all care that is possible to prevent its spreading, and unless the contagion has already been sown broadcast, will stamp it out at once.

## SMALL-POX AT PIQUA, WOODSON COUNTY.

BY E. K. KELLENBERGER, M.D., YATES CENTER, COUNTY HEALTH OFFICER.

YATES CENTER, KAS., March 1, 1890.

*J. W. Redden, M.D., Sec. Kansas State Board of Health, Topeka, Kas.*—DEAR DOCTOR: Supported by municipal law and police regulation, it is comparatively easy to maintain a quarantine; but with a village, beyond the limits of the quarantine provision of statutory law, the obstacles are almost insurmountable. At the onset people receive the declaration of the presence of a scourge like small-pox with fear and dread, and every measure for its restriction and prevention receives their hearty, enthusiastic support. They soon, however, from familiarity, become heedless of danger and restless under restraint, and look upon measures adopted for the suppression of the disease, if very strict, as unnecessary and uncalled for. Such was the condition of affairs at Piqua, Woodson county, Kas. I herewith submit the following brief history:

On the morning of July 8, 1889, I received a telegram from the Hon. H. D. Dickson, of Neosho Falls, Kas., stating there was "a very suspicious case at Ed. Stewart's, in Piqua. Had you not better investigate, and if contagious, take measures to prevent spreading?" Nothing definite, I deferred visiting Piqua, but wired, and received an answer stating that there were "a few cases of chicken-pox up and running around town." The evening of the 8th I received the following telegram from Dr. J. L. Jones: "Come without fail to Piqua; will meet you this evening." Nothing yet stated as to the nature of the disease, I still deferred going, and on the following day I received a telegram from a Mr. Flack, a citizen of Piqua, asking me to "come down and determine whether it was small-pox or not." On the

morning of the 10th day of July I drove down to Piqua, a small village of about 150 inhabitants, thirteen miles east of Yates Center, situate at the crossing of the M. K. & T. and Ft. S. W. & W. Railroads. There I found Dr. J. L. Jones in waiting. Together we visited Ed. Stewart's, a colored family. Found the mother in the vesicular stage; a child about two and a half years old in the stage of maturation; the father was in the third day of initial fever, with shot-like indurations on the forehead—unmistakably and indisputably small-pox.

Investigation revealed that Mrs. James Ashen visited Fort Scott, Kas., about the 16th day of May, 1889, returning to Piqua. About the second day of June following, Roy, a son about four years old, was taken with what was supposed to be a severe attack of chicken-pox. Three other members of same family—children—were in turn attacked. Before the crusts had all fallen, they were running around town, mingling with the people on the streets, and playing and romping with other children. This was the nidus of dissemination.

From the unknown extent of exposure to contagion, I deemed it the prudent course to quarantine the whole village for a period of eighteen days. To do this, guards were placed on the outskirts, to warn and prevent persons coming into the village, until the quarantine limit for exposed persons had expired.

The superintendents of the Ft. S. W. & W. and M. K. & T. Railroads were at once notified of the presence and extent of the disease. Promptly all trains were ordered to make no stop at Piqua; still mail matter was thrown from passing trains, but none received.

A physician was called in the commencement of the trouble before the disease had fully developed, and in a hurried examination, pronounced it chicken-pox. He saw the case but once before the disease was fully manifest; with this impression among the people, and fearing trouble in maintaining a strict quarantine, the Secretary of the State Board of Health was requested to send a member of the Board to Piqua. Responding to the request, H. D. Hill, M.D., member of the State Board of Health, on the 17th day of July, 1889, visited Piqua, Kansas, and examined 16 cases then in the various stages, and by proclamation declared the presence of variola, or what is commonly known as small-pox. I take pleasure in stating that without his presence and good counsel and convincing address to the people, it would have been well-nigh impossible to have maintained an effective quarantine. After the expiration of 18 days, the residents were permitted to leave the village and go into the country; the infected houses and inmates remaining in absolute isolation: guards being always near, day and night, to supply their wants, and prevent any one leaving the house or going to them.

The total number of cases was 28: varioloid, 3; variola, 25. Nationality: American 22, German-American 4, Bohemian 2, white 24, colored 4. Vaccinated 3, not vaccinated 25.

The colored woman was attacked July 1st, 1889; had premature labor August 16, 1889. Period of utero-gestation, 4½ months. There was one death—male—aged about 15 years. He was taken sick August 2, and died August 11. Complication, or immediate cause of death as reported by attending physician, uremia.

Having nature's powerful disinfectants, heat, light, and perfect ventilation (doors and windows wide open) bringing an abundance of pure air, the disease was comparatively mild, there being but one death in twenty-eight cases. Quite a number were badly pitted, others escaping with scarcely a trace. A few of the cases received no treatment whatever. In every household, after the crusts had all fallen, each patient was given a disinfectant bath, after having been removed from the house to a tent erected near by, where they remained until the house was disinfected and fumigated. All clothing that could be washed was immersed in a solution of mercuric iodide for five hours; afterward put through the usual process of washing. All inside wood-work—doors, base-boards, casings, windows, flooring, and bedsteads—were scrubbed with a solution of mercuric iodide; this in turn was removed with water. All clothing that could not be washed was suspended from the ceiling, the house "corked up," and while the floors were still damp and wet, fumigated with sulphur, using five pounds of sulphur to one thousand cubic feet of space. After standing twenty-four hours, the doors were thrown open, and after the gas had escaped they were permitted to return from the tent to the house. On September 9, 1889, I visited Piqua, and fumigated the last house where the disease had existed. The next day guards were discharged, and the quarantine declared off.

It is now six months since the last infected house was disinfected and fumigated; there has been no reappearance of the disease.

Dr. J. L. Jones, of Neosho Falls, was the attending physician; having left his family and practice, that he might give them proper service. He is deserving of unqualified praise for his devotion and unremitting attention to those committed to his care and attention. The County Commissioners were anxious that everything should be done to exterminate the disease, but, being old farmers with a desire probably of making a showing of economy to their constituents, were niggardly in their allowance for services rendered, and the bill for remedies and disinfectants still remains unpaid.

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#### SMALL-POX IN BUTLER COUNTY.

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BY J. A. M'KENZIE, M.D., EL DORADO, COUNTY HEALTH OFFICER.

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EL DORADO, KAS., September 14, 1889.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kansas—*  
DEAR DOCTOR: I hereby respectfully submit all the statistical evidence I have been able to obtain in reference to small-pox in our city and county



during the months of May, June, July and August of the present year. The disease was brought to our city by John H. Betts, one of our citizens, who, like many others, went to Oklahoma upon the opening of that country to settlement, on the 22d of April last; and, as in the case of many others who flocked to that country at that time, it has proven to be a very dear trip.

Mr. John H. Betts, aged 43, American, returned from Oklahoma April 29, 1889, and on May 16 was taken sick with chills and fever, headache, and backache; two days afterward an eruption made its appearance on face and body, which disappeared in two days, and on May 20 he was out, feeling as well as usual, with the exception of a general debility. It was thought by Mr. Betts's attending physician that the symptoms looked suspicious, and he was interrogated closely in regard to the possibility of his having been exposed to small-pox, but he could give no information further than that he had been to Oklahoma; but from the fact of the extreme mildness of all the symptoms, and the short duration of the disease, and from the further fact that Mr. Betts had been home from Oklahoma eighteen days, and had no probable chance of contracting the disease in the interim, it was thought that his trouble was nothing more than a slight malarial attack, and that nothing further would come of it. But when, on June 2, Miss Nellie, aged 18 years, and on June 3 Miss Hattie, aged 13 years, daughters of John H. Betts, were taken sick with premonitory symptoms of small-pox, three days after first symptoms an eruption making its appearance, the suspicions the attending physician had in reference to Mr. Betts's ailment were more than confirmed. Neither of the young ladies had ever been successfully vaccinated. Miss Nellie had confluent small-pox, which ran the regular course of the different stages with no complications, and convalesced with no bad results, other than leaving her badly marked. Miss Hattie was more fortunate, having the disease in the discrete form, and convalesced with no bad results.

Mrs. Sallie Betts, American, aged 43, wife of John H. Betts, Fred., John jr., and Hazle, children of Mr. and Mrs. Betts, ranging in age from 3 to 14 years, all had the discrete form of the disease; all recovered with no bad results.

Now we come to the saddest part of the history of this loathsome disease as regards the Betts family. Harry, aged 20 years, the pride of the family, beloved by all who knew him, an active member of the Young Men's Christian Association, a model for everything noble and honorable, was exposed June 13th to the contagion, and on June 22d was taken down with the premonitory symptoms, which increased in severity and proved to be the hemorrhagic form of the disease. Had hemorrhage from the nose, throat, stomach, bowels, and kidneys. The eruption was slow in making its appearance, and when it did presented the appearance of hemorrhagic spots level with the surface. He was delirious from the outset. Temperature ranging from 103 to 105½, until July 4th, when he died in great agony.

I forgot to mention in the proper place that Mr. John H. Betts had been

vaccinated when a child. Neither Mrs. Betts nor the last-named children had ever been successfully vaccinated. There was also a female servant in the family of Mr. Betts, at the time, age and nationality not known, who had varioloid.

Mrs. Wigginton, American, aged 49 years, taken down July 20th with mild small-pox, had been vaccinated when a child seven years old; origin of the disease uncertain. Recovered.

Mrs. Spangler, American, aged 31 years, taken down July 20th with confluent small-pox, which ran the regular course, and convalesced with no bad results, save to mark her badly. She had never been successfully vaccinated. Origin of the disease uncertain.

Cremel Foster, female, American, aged 18 years, taken down August 10th with modified small-pox, and after the regular stages, convalesced with no bad results. Had been vaccinated some years ago, and revaccinated about three weeks before taken sick. Miss Foster is supposed to have contracted the disease from the Betts family.

Mr. Peyton, American, aged 22 years, was taken down July 14th with varioloid; claimed to have had the disease, and assisted in the burial of Harry Betts; therefore contracted the disease at that time; recovered with no bad results. Had been vaccinated.

Daniel Walrond, American, aged 18 years, taken sick July 27th with confluent small-pox, contracted from Peyton; the disease running the regular course; recovered with no bad results.

Mrs. Lombart, age and nationality not known; wife of an engineer on the Missouri Pacific Railroad; removed to our city from Reece during the prevalence of the disease there; was taken sick shortly after her arrival, with varioloid; recovered. Supposed to have contracted the disease while a resident at Reece.

These are all the cases that have occurred in our vicinity this year, and we feel safe in saying that there will be no more, unless brought here again. During the prevalence of the disease, the strictest quarantine was maintained. Those who had the disease were isolated, and those who had been exposed were guarded until the period of incubation had passed.

Date of first symptoms.....	Name.	Age, years.....	Form of disease.	Date of eruption.....	Vaccination.	Result.
May 16	John H. Betts.....	43	Varioloid.....	May 18..	Vaccinated.....	Recovered.
June 2	Nellie Betts.....	18	Confluent.....	June 5..	Unvaccinated....	Recov., badly marked.
June 3	Hattie Betts.....	13	Discrete.....	June 6..	Unvaccinated....	Recovered.
.....	Sallie Betts.....	43	Mild.....	.....	Unvaccinated....	Recovered.
.....	Fred. Betts.....	14	Discrete.....	.....	Unvaccinated....	Recovered.
.....	John Betts jr.....	11	Discrete.....	.....	Unvaccinated....	Recovered.
.....	Miss Hazel Betts....	3	Discrete.....	.....	Unvaccinated....	Recovered.
June 13	Harry Betts.....	20	Hemorrhagic....	.....	Unvaccinated....	Died July 4.
.....	Female servant.....	.....	Varioloid.....	.....	Vaccinated.....	Recovered.
July 20	Mrs. Wigginton.....	49	Modified.....	.....	Vaccinated.....	Recovered.
July 20	Mrs. Spangler.....	31	Confluent.....	.....	Unvaccinated....	Recov., badly pitted.
Aug. 10	Miss C. Foster.....	18	Modified.....	.....	Vaccinated.....	Recovered.
July 14	Mr. Peyton.....	22	Varioloid.....	.....	Vaccinated.....	Recovered.
July 27	Daniel Waldron.....	18	Confluent.....	.....	Unvaccinated....	Recovered.
.....	Mrs. Lombart.....	.....	Varioloid.....	.....	Vaccinated.....	Recovered.

## SMALL-POX IN TOPEKA.

BY W. A. WILLIAMSON, M. D., TOPEKA, COUNTY HEALTH OFFICER.

TOPEKA, KAS., September 17, 1889.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR SIR: I send you the following account of the cases of small-pox which occurred in Topeka during the latter winter months and early spring.

The first case was a railroad man, Porter, who, contracting the disease in New Mexico, returned home. The patient was confined to one room as much removed from the family as possible, a high board fence built around the premises, and night and day guards stationed. This quarantine was continued until the last case in the family had entirely scaled off. The family were then removed to a tent, bed-ticks and soiled clothing burned, the remainder soaked in solution C, and the house fumigated. The family changed clothing in the tent, and moved back to the house. I give this in detail, as all the other infected houses were treated in the same manner. Three children in this family had contracted the disease.

George M. Ewing contracted small-pox in Colorado, the eruption appearing on his return to Topeka.

The source of contagion in the Stewart family (colored) could not be traced. On the first visit of the City Board of Health to their family the mother was found broken out, and the two children attending school. The board immediately visited the school and vaccinated between 150 and 200 scholars. The two children contracted the disease, the father escaping.

How the Lane child (in Potwin) contracted the disease was not clear at first. The Lane residence is a block distant from the house to which George M. Ewing, a small-pox case, had been removed. No intercourse had taken place between the families, but it was afterwards discovered that a pet dog, a playmate of the child, passed frequently between the houses, and undoubtedly conveyed the virus to the child.

Between February 21 and May 7 fourteen cases of small-pox were reported in and around Topeka; nine were white, five colored. Two deaths occurred—George M. Ewing, confluent small-pox, and a colored woman, 316 Taylor street; the latter was scaling and sitting up, when death took place suddenly, probably from heart failure.

It seems worthy of note, that of the 150 school children exposed by the Stewart family, no case of the disease resulted. Three-fourths of the vaccination done by the board at that time were reported to have taken.

On the next page will be found a tabulated statement of the cases as reported above.

Date of first symptoms.....	Name.	Age, years.....	Color.	Date of eruption.....	Form of disease.	Vaccination.
Feb'y ...	— Porter.....	40	White....	Feb. 21..	Discrete.....	Vaccinated.
March...	Porter's child.....		White ...	Mar. —..	Discrete.....	Vaccinated.
March...	Porter's child.....		White ...	Mar. —..	Discrete.....	Vaccinated.
March...	Porter's child.....		White ...	Mar. —..	Discrete.....	Vaccinated.
March...	Porter's child.....		White ...	Mar. —..	Discrete.....	Vaccinated.
March...	Musselman.....	24	White....	Mar. 24..	Discrete.....	
.....	Geo. M. Ewing (died).....	30	White....	April 15..	Confluent.....	Vac. (small scar).
May.....	Mrs. Stewart.....	40	Colored..	May 3..	Semi-confluent..	
May.....	Mrs. Stewart's boy .....	10	Colored..	May —..	Discrete.....	Vac. May 3, '89.
May.....	Mrs. Stewart's girl .....	8	Colored..	May —..	Discrete.....	Vac. May 3, '89.
May.....	Woman, 316 Taylor st. (died)...	26	Colored..	May 7..	Discrete.....	
May.....	Man, 316 Taylor st.....	55	Colored..	May 17..	Discrete.....	Vaccinated.
May.....	James Doyle.....	34	White....	May 9..	Semi-confluent..	Vac. (scar).
May.....	Lane child, Potwin Place.....	3	White....	.....	Confluent.....	Vaccinated.

[The following communication explains itself; and I take great pleasure in complying with the request of Dr. Jacobs in furnishing it for publication in the Fifth Annual Report of the Kansas State Board of Health for the year 1889.—J. W. REDDEN, M. D., *Secretary*.]

#### SMALL-POX IN EMPORIA IN 1888.—A CORRECTION.

BY L. D. JACOBS, M. D., OF EMPORIA.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: In looking over the Fourth Annual Report of the State Board of Health of the State of Kansas, I find on page 23, in a letter addressed to you by W. A. Shelton, M. D., health officer of the city and county of McPherson, a statement in reference to myself, which is untrue in its representation, and if permitted to remain uncontradicted, will do me great injustice.

In this letter, Dr. Shelton endeavors to give the origin and history of small-pox then (Feb. 28, 1888) prevailing in McPherson. After describing a number of cases, which were the first to appear, he says:

"The grandparents of the first patient, who returned to Emporia, were attacked in a mild form, when Dr. Jacobs was called, who pronounced it chicken-pox, which he continued to do for some fifteen or sixteen days, when the third party was attacked, and the doctor became suspicious that he detected symptoms of small-pox. Thereupon he called counsel; and still continued to call it chicken-pox, until within the last ten days I understand they have confirmed it to be small-pox."

Now the facts in the case are these: On the evening of February 2, 1888, (and this, too, the first time that I was called to see or was consulted in reference to any member of the Davis family,) I was called to see C. H. Davis, whom I found suffering with nausea and vomiting, pains in stomach and bowels, some diarrhea, great pains in head and lumbar region, and considerable fever. There was a slight eruption on his face (maculæ). Eruptive spots were also perceptible in the fauces. I inquired of him if he had been



away from our city, to which he replied "No." I informed him that my reason for asking the question was because his symptoms seemed to me to be characteristic of small-pox, which disease was not existing in our community. He then told me that his mother had been nursing her little grandchild at McPherson, where the child had been sick with chicken-pox. I inquired particularly about the case, and having ascertained that the child had returned, I had him brought into the room and examined him. On account of the remaining coloration of the eruption, and the history of the case, I had grave doubts as to its having been chicken-pox, and I so expressed myself to the grandmother. Mrs. Davis, the grandmother, assured me that the physicians who attended the case were decided in their opinions that the case was chicken-pox. She also informed me that an eruption, of however only a few spots, had appeared on her face and head, and that for several days she had been quite ill.

I prescribed for my patient, and stated that I would reserve my opinion as to the nature of the case until sufficient development took place to enable me to make a diagnosis; but I instructed the family to avoid communication with outsiders, and especially to permit no one to enter the house. On the next day I found my patient comfortable. The eruption was much greater, and was assuming a vesicular appearance. I again stated my suspicions as to the character of the disease, and again insisted upon isolation—and it was carried out.

On account of my being absent from the city, I was not able to visit my patient again until the morning of the 6th, when I found the eruption so characteristic that I unhesitatingly pronounced it small-pox, and I immediately reported the case to Dr. F. B. Sherburne, chairman of the Board of Health, and requested him to employ a physician to take charge of the patient. Dr. J. H. Page was employed, who upon examination of the patient verified my diagnosis. The house was immediately quarantined, and the usual precautions taken to prevent the spread of the disease.

In confirmation of the correctness of my statements, I herewith present statements of Dr. Sherburne, chairman of the Board of Health of Emporia, and Dr. Page, attending physician on the case for the city.

On the 18th of February, twelve days after the time when I turned my patient over to the city authorities as a case of small-pox, I received a telegram from the mayor of McPherson, inquiring of me whether there was small-pox in Emporia, and if C. H. Davis had it. I replied by telegram, as nearly as I can remember, as follows: "We have only one case of small-pox. It is Davis. He got it through his mother, who nursed her little grandchild lately sick in your city with small-pox. You have small-pox in McPherson." I understand that upon the reception of my telegram the mayor immediately telegraphed to Kansas City for a physician, who, upon his arrival and an examination, pronounced the disease which had been pre-

vailing so many weeks in the city of McPherson under the name and title of chicken-pox, *small-pox*.

And now, my dear Doctor, in justice to me, kindly see to it that in the future publication of the Fifth Annual Report of the State Board of Health the necessary correction shall be made. And, that I may be immediately set right in this matter, I respectfully request you to have this communication, together with the statements of Drs. Sherburne and Page, published in the *Kansas Medical Journal*. Very truly yours,

L. D. JACOBS, M. D.

EMPORIA, KANSAS, May 22, 1889.

*J. W. Redden, Secretary State Board of Health*—DEAR SIR: On the 6th day of February, 1888, Dr. L. D. Jacobs reported to me C. H. Davis as having small-pox. This was the fourth day of his sickness. We employed Dr. Page to take charge of the case. He found the patient doing well. We quarantined the house. There were no new cases resulting from this one. Respectfully,

F. B. SHERBURNE, M. D.,  
*Chairman of the Board of Health.*

EMPORIA, KANSAS, May 24, 1889.

*To whom it may concern:* I hereby certify that on February 6, 1888, I was employed by the Board of Health of the city of Emporia to attend one C. H. Davis, who had been reported sick with small-pox by Dr. L. D. Jacobs, of this city. I visited Mr. Davis daily from the 6th to the 18th of February, inclusive, when convalescence was established. This was a typical case of variola, unmodified by vaccination. Respectfully,

J. H. PAGE, M. D.

## SMALL-POX IN ATCHISON, BROWN, GEARY AND DICKINSON COUNTIES.

BY J. W. REDDEN, M. D., TOPEKA, SECRETARY OF STATE BOARD OF HEALTH.

At the request and by the direction of the Executive Committee of the State Board, I made an official visit to the counties of Atchison, Brown, Geary and Dickinson, for a conference with the health officers, attending physicians and county officials, to examine the patients, and see that the quarantine was rigid and enforced, all precautionary measures being used, and the patients receiving proper attention. Below I give a brief synopsis of the results of said tour.

The authorities and attending physician at Atchison were both willing and anxious to enforce all necessary quarantine and precautionary measures. At night I visited the hospital with the attending physician, Dr. Farrington, and found everything in a favorable condition. I examined the patient very carefully, and gathered the following facts: A young white man named Lawrence Brennick, unmarried, aged 25 years, born in Illinois, a resident of Atchison, was cutting ice for an Atchison company at Glen Rock, Nebraska; returned to Atchison, Sabbath, February 19th; was taken ill with rigors,

fever, pain in back, head, etc.; nausea a few days subsequently. On Tuesday, February 28th, was visited by the city physician, Dr. Farrington, in a family near Ladies' Hospital, was removed to the hospital. In two days the eruption appeared, followed by the papular stage; pronounced small-pox. Quarantine established over hospital and family formerly exposed. Isolation, vaccination, and other precautionary measures enforced. Patient doing well, and prospect of recovery. Was vaccinated when six years old, but without effect. He is a laborer. No indication of anyone else contracting the disease up to the present time.

The authorities promised to use thorough disinfection, destroy by fire all necessary material and bedding that could not be disinfected, and to spare no expense to stamp out the disease without any further communication, and with good prospects of success. All the inmates of the hospital were vaccinated and isolated, and showed no indication of contracting the disease.

From Atchison I went to Hiawatha and held a conference with the city and county officials and health officers, and at their request visited Reserve, a small village in the northern part of Brown county, two miles from the Nebraska line; receiving special permit from the railroad officials to get off and on the train, as the village and vicinity were under strict quarantine and guard, and none of the railroad trains stopped at the station. The resident physician, Dr. Taylor, met me at the depot, and in his conveyance we visited twenty patients out of the number that were sick with the disease, and found typical cases in all varieties and stages of the disease, from the little infant six weeks old to the babe of seven weeks old with confluent small-pox—the youth and maiden, and the man and woman of fifty. In some houses a single case, and in some six persons were afflicted with the disease. From January 21, the date when the first person was taken sick, up to the present time, there have been sixty-two cases in this little village, all white, and with but one death; that, a babe six weeks old with confluent small-pox, died on Monday. This babe might have been saved had the attending physician vaccinated it instead of saying, “he would not advise it, as nursing babes *rarely took* contagious diseases.” In one instance, a man 44 years old, had small-pox in New York when he was 18, has varioloid at this time. Another man, 50 years old, has varioloid now for the second time, having had it when he was six years old. A young woman aged about 25, three months advanced, has small-pox, with no complications up to date.

The disease was introduced as follows: Dr. Taylor, resident physician, a young man, married in Maryville, Missouri, on January 16, where a disease was prevailing in an epidemic form, pronounced by the resident physicians *chicken-pox*. Jan. 21 his wife was taken sick, having what he supposed to be *chicken-pox*, but which in reality was discrete *small-pox*. He did not exercise the proper precautionary measures even for a case of chicken-pox, and visited his patients with the result above stated. Some of the patients became so bad that a physician was called from Falls City, Nebraska, five

miles north, who pronounced it small-pox. As there was some controversy as to the nature of the disease, he had photographs taken of two of his patients; sent copies of them to the County Health Officer of Brown county, who gave them to me for future use.\* Both of these cases had confluent small-pox; and the eruption and pustules were so typical that no physician who saw them ought to have had any question or hesitancy as to the diagnosis. Such an error in diagnosis is inexcusable, culpable, if not even criminal; and the sad consequences resulting therefrom are incalculable and irremediable.

The first case was that of a Mr. Perkins, and the other that of a Miss Miller. Both of these cases are referred to in Dr. Nye's special report on small-pox in Brown county.

There was a disposition to allow the convalescent cases to be released and at liberty too soon; but I ordered in this, as in all other instances, the enforcement of the only safe rule, which is laid down by all the leading State boards of health and prominent sanitarians, "That no patient be discharged and allowed perfect freedom until two weeks after his recovery, or from the time the crusts have fallen off;" and also to use daily, previous to that period, disinfecting baths. I also ordered that all clothing, bedding and furniture that could not be disinfected be burned, and that the rooms, walls and ceilings be thoroughly disinfected and fumigated.

The neighboring towns in Brown county and in Nebraska had established, and were strictly enforcing, rigid quarantine against Reserve and vicinity. The following proclamation, by the Mayor of Hiawatha, is a fair sample of the others:

PROCLAMATION.

Whereas, it has been brought to the knowledge of the City Council that small-pox is infecting the town and vicinity of Reserve, Kansas, now, for the purpose of preventing the spread of this disease and its introduction into this city, it has been ordered by the City Council that a rigid quarantine be established; and to enforce the same, assistant marshals have been stationed at or near the confines of the infected territory, who are fully empowered by the laws of the State and regulations of the City Council of Hiawatha, Kansas, to prevent all persons from coming from such infected territory into the city.

I, L. R. Yates, Mayor of the city of Hiawatha, Kansas, do hereby order that no person from the infected districts be permitted to pass the deputy marshals, coming toward this city. And should any violate this order, they will be punished as provided by law.

All good citizens are enjoined to assist the officials, by voice and conduct, in maintaining this order.

L. R. YATES, *Mayor*.

Done at Hiawatha, Kansas, February 20, 1889.

[Seal.] C. H. LAWRENCE, *City Clerk*.

At Junction City I held a pleasant conference with the city and county

\*It was my intention to have these photographs illustrated by wood-cuts, and made a part of this report; but the engravers, both in Topeka and Chicago, found it impossible to make engravings directly from the photographs, or even satisfactory drawings.



officials and health officers, and visited with the attending physician the cases there; in all five, all white, ranging from mild varioloid to confluent small-pox. The first case was a Mrs. L—, who came from Arizona to Junction City Wednesday, January 9th, to visit her sister, and on the 16th was taken sick with varioloid. A physician (a relative) was called to see the case, and pronounced it *chicken-pox*. On the 30th her mother was taken sick, and another physician (County Health Officer) called in consultation, and confirmed the diagnosis. On February 16th, the consulting physician was taken down with small-pox, and is now convalescing; is well pitted. A patient in the country consulted him and contracted the disease, and is now sick with small-pox. The hired man where Mrs. L— was stopping was taken sick February 16th, and has small-pox. The hired girl, a Swede, living in the same house, aged 21 years, vaccinated when six months old, has three scars, was taken sick February 14th. Sent home to her father's, in Dickinson county; took varioloid. The family consisted of father, mother, two brothers, and two sisters. Mother vaccinated when a child; had six scars; had varioloid in a mild form. Father took sick February 14th with confluent small-pox, in a malignant form, and died March 8th; had a very dim scar. The other two girls and the two boys all had small-pox, and are still sick, but doing well; all seven sick in the same house at the same time. I never saw a family more to be pitied; before relief was given, they suffered untold misery and discomfort. Thus one entire family of seven and one death in Dickinson county, and four cases in three families in Davis county, contracted the disease from a case of *varioloid*, contracted in Arizona; and all resulting from either the *ignorance* or criminal *carelessness* of the attending physician. Who can estimate the cost and suffering resulting from this error of diagnosis? Mark the results in Decatur county from similar error, where the physician had to be quarantined, with his wife and family. And still worse in Brown county, through gross neglect of a young physician, carrying the contagion from his wife.

This loathsome disease has thus been introduced into these thirteen counties from Missouri, Colorado, Arizona, and New Mexico, and communicated to the adjoining counties. The authorities in Davis county had had some trouble in maintaining strict quarantine, but thought that from now on it would be enforced and observed.

Many are the profitable reflections and lessons we should learn from the history of this disease in these different counties, thus briefly but specifically outlined. It surely emphasizes this important and valuable axiomatic truth, that "Eternal vigilance is the price of liberty."

## SMALL-POX IN LINN, LYON AND GREENWOOD COUNTIES.

BY J. W. REDDEN, M.D., SECRETARY STATE BOARD OF HEALTH.

On Saturday, March 23d, at the request of the Executive Committee of the State Board of Health, and the local Health Officer of Linn county, I visited Mound City, the county seat of said county, and after having a conference with the County Health Board, at their request I went twelve miles into the country and visited the two families where small-pox was prevailing.

The first family I visited was named McDowell, who lived about seven miles northwest of Mound City. This family consisted of six persons: a man, his wife, his two children, his aunt, and his cousin. After a careful and thorough examination, I gathered the following history:

Miss Mary A. McDowell, a maiden lady aged 52, had been on a visit in northwestern Missouri, and came home from Julesburg, Schuyler county, Mo., about January 15th of the present year to her nephew's, Lincoln McDowell, with whom she was living. She was taken with the promonitory symptoms of small-pox about twelve days subsequent to that date, and had confluent small-pox. She was never vaccinated.

*Second Case.*—Lincoln McDowell, aged 27 years, never vaccinated, was taken sick February 18, and had confluent small-pox of a severe type.

*Third Case.*—Jennie K. McDowell, his wife, aged 25 years, was taken sick February 19; had confluent small-pox, and was delirious for two weeks; was never vaccinated. During the worst stage of her sickness, and while delirious, she gave birth to a child, eight and one-half months advanced. A few days afterward, the child took varioloid of a mild type. The child's name is Emma E. McDowell, and at the time that I visited them was four weeks old, and was recovering from the disease; had but a few pits on her. At last account, both mother and child were doing well.

*Fourth Case.*—Cloud McDowell, aged 2 years and 9 months, was taken sick February 18, and had small-pox of a discrete form.

*Fifth Case.*—Merrit W. McDowell (a cousin), aged 18 years, was taken sick February 20, having been vaccinated one week previously; had varioloid.

Thus we find all six of the family had the disease in all its stages. All recovered; due in a great part to good nursing and attention, good hygienic surroundings, thorough ventilation, disinfection, and other essential precautionary measures.

The next family I visited was that of Dr. Anderson Rash, living five miles north of the McDowell family. He was called to see Miss Mary McDowell when she was first taken sick, the latter part of January; was uncertain for several days as to the nature of the disease, but thought at first it was chicken-pox. As he had never been vaccinated, and not using proper precautionary measures, and thorough disinfection, being exposed to

the contagion he was taken sick about 16 days subsequently, and had discrete small-pox. As soon as he was taken sick, Dr. I. E. Coe, of Mound City, the County Health Officer, visited him (Feb. 24); vaccinated the rest of the family, consisting of four children—three boys and one girl. The vaccination took in the three older children, namely: John A., aged 25 years; Nettie A., aged 17 years; and Horace R., aged 11 years. These three escaped the disease entirely, although living in the same house and were under the same rigid quarantine, but isolated from the sick-room. The vaccination of the other son, aged 8 years, did not take, and he was taken sick March 12th; had confluent small-pox, and at the time of my visit was confined to his room, and the disease was in the pustular stage. Dr. Rash was about convalescent and the son in a fair way for recovery.

The quarantine was rigidly enforced in both of these families, and all proper precautionary measures exercised in the way of isolation, vaccination, ventilation, and disinfection. The disease was confined to the two families, and all of the eight cases have recovered. This remarkable result is due to the prompt and efficient measures adopted and carried out by the County Health Officer, backed by the County Commissioners, sparing no expense or labor to make the quarantine effectual, and to speedily and thoroughly stamp out the disease by thorough disinfection and fumigation of all material, and burning of all articles that could not be disinfected. Their prompt action and the efficient measures adopted cannot be too highly commended, and is an example worthy of imitation by all the other county officers and local health boards in the State. The suffering, loss and deaths prevented, and the economy exercised in a pecuniary point of view, cannot be estimated, and is another striking argument in favor of the utility and value of county and State health organizations.

On Tuesday, March 26, I visited Emporia, and had a conference with two of the county commissioners and Dr. Burke, who was the attending physician of the small-pox cases at Bushong, in the northwest part of Lyon county, on the Missouri Pacific Railway. In company with Dr. Burke, we drove over to Bushong, visited all the families, and made a personal examination of all the patients, and inspection of the premises occupied by each, (all the patients still being under quarantine,) and gathered the following facts:

The first patient, named George E. Hall, aged 25 years, was never vaccinated. He left Kansas City January 7th, and while there was exposed to small-pox. He came to Bushong January 7th, to work in the stone quarries; was taken sick with small-pox January 17th, and had a severe attack of a confluent form, and will be badly pitted. He was boarding in a frame boarding-house, in the front part of which was a meat shop, only separated by a thin board partition. All the subsequent 37 cases were developed from and through exposure to this first case.

The second case was that of Mary A. Lampson, living in the same boarding-house, aged 36 years; was taken sick February 2d; had confluent small-

pox, and will be badly marked; thought she was vaccinated when ten years of age; if so, the scar was imperceptible.

The third case was Samuel H. Lampson, aged 38 years; was vaccinated when 12 years old; was taken sick with small-pox February 4th, with aggravated symptoms; eruption never came out, and he died from prostration February 10th.

The fourth case was Louisa Holdinghausen, aged 5 years; never vaccinated; taken sick February 2d; had small-pox.

*Fifth Case.*—Lucinda J. Holdinghausen was vaccinated when 3 years old; is now 28 years old; taken sick February 3d; had discrete small-pox.

*Sixth Case.*—Allison Holdinghausen, aged 8 years, was never vaccinated; taken sick February 1st; had discrete small-pox.

*Seventh Case.*—W. M. Holdinghausen, aged 32 years; vaccinated 15 years ago; taken sick February 5th; had discrete small-pox.

*Eighth Case.*—John Kinch, aged 46 years; vaccinated 30 years ago; vaccinated since without effect; taken sick February 5th, eighteen days after exposure; had varioloid.

*Ninth Case.*—Celia B. Leet, aged 2 years; never vaccinated; taken sick March 4th; symptoms very severe; eruption never fully developed; died March 12th.

*Tenth Case.*—Julia Leet, mother of Celia, aged 30 years; vaccinated when quite young; scar very dim; contracted the disease from her daughter; taken sick March 18th; had discrete small-pox.

The first eight of the above cases were either living or boarding in the house where the first case was taken down with the disease, in the village of Bushong. The last two cases were living over a hardware store in the same village about 100 yards north of the boarding-house and meat shop.

The next family we visited, living about two miles west of the village, consisted of a man, his wife, and five children. This family lived in a small shanty of two rooms, located on open prairie.

*Eleventh Case.*—Francis Clark, aged 39 years; never vaccinated; taken sick February 4th; had small-pox.

*Twelfth Case.*—Malissa Clark, aged 17 years; was never vaccinated; taken sick March 5th; had small-pox.

*Thirteenth Case.*—Nathan Clark, aged 15 years; was never vaccinated; taken sick March 7th; had small-pox.

*Fourteenth Case.*—Lydia Clark, aged 13 years; was never vaccinated; taken sick March 7th; had small-pox.

*Fifteenth Case.*—Hannah Clark, aged 8 years; was never vaccinated; taken sick March 12th; had confluent small-pox of a severe type.

*Sixteenth Case.*—Alta Clark, aged 5 years; was never vaccinated; taken sick March 12th; had small-pox.

*Seventeenth Case.*—Bertha Clark, aged 2 years; was never vaccinated; taken sick with small-pox March 10th; symptoms very violent; eruption never appeared; and she died from prostration March 12th.



The next family visited was the Green family, living two miles north of the village.

*Eighteenth Case.*—Wm. Green, aged 14 years; was never vaccinated; taken sick February 2d; had small-pox.

*Nineteenth Case.*—Abijah Green, aged 57 years; was vaccinated when 23 years old; scar very dim; taken sick February 11th; had confluent small-pox.

*Twentieth Case.*—Samuel Green, aged 9 years; was never vaccinated; taken sick February 11th; had confluent small-pox.

*Twenty-first Case.*—Emma Green, aged 45 years; was vaccinated when 18 years old; taken sick February 11th; had a mild attack of varioloid.

*Twenty-second Case.*—The next case was Wm. Gillespie, aged 27 years (living with the Green family); was never vaccinated; taken sick February 25th; had confluent small-pox.

The next family was that of McGalliger, living about two miles south of the village.

*Twenty-third Case.*—Wilbur McGalliger, aged 8 years; was never vaccinated; taken sick February 26th; had discrete small-pox.

*Twenty-fourth Case.*—John McGalliger, aged 35 years; vaccinated when quite young; taken sick March 12th; had varioloid.

*Twenty-fifth Case.*—McGalliger girl, aged 7 months; was never vaccinated; taken sick March 12th; had small-pox.

*Twenty-sixth Case.*—Old man McGalliger, aged 65 years; was vaccinated when quite young; taken sick March 19th; had varioloid.

The next family was that of Anderton, living some three miles south-east of the village.

*Twenty-seventh Case.*—Joseph H. Anderton, aged 28 years; was vaccinated when quite young; taken sick February 3d; had varioloid.

*Twenty-eighth Case.*—William Anderton, aged 9 months; was never vaccinated; taken sick February 15th; had discrete small-pox.

*Twenty-ninth Case.*—James Anderton, aged 6 years; was never vaccinated; taken sick February 17th; had discrete small-pox.

*Thirtieth Case.*—Thomas Anderton, aged 8 years; was never vaccinated; taken sick February 19th; had discrete small-pox.

*Thirty-first Case.*—Joseph Anderton, aged 11 years; was never vaccinated; taken sick February 21st; had discrete small-pox.

*Thirty-second Case.*—Annie Anderton, aged 25 years; was vaccinated 12 years ago; taken sick February 15th; had a mild attack of varioloid.

*Thirty-third Case.*—Wm. Roe, aged 21 years, living in the same family, was vaccinated 12 years ago; taken sick February 15th; had a mild attack of varioloid.

*Thirty-fourth Case.*—Mr. Leet; had a very mild attack of varioloid.

*Thirty-fifth Case.*—Mr. Leet's little girl, aged about 5 years; was vaccinated, and had a mild attack of varioloid.

*Thirty-sixth, thirty-seventh and thirty-eighth cases* were men, quarantined

in the Leet house; all of them had been vaccinated, and had mild attacks of varioloid.

Have not been able to obtain anything more from the history of the last three cases, than the knowledge that they all recovered.

We find from the history of the above epidemic, that there were 38 cases and three deaths; the age of the oldest being 65 years and the youngest seven months; and that the disease prevailed in six different houses—two in the village, and four in the country; and in nine different families, three of which families lived in the boarding-house in the village; and every member of each family was attacked except Mr. Leet and Mrs. Galliger. This entire epidemic was the result of the disease being introduced from Kansas City, Missouri, into Bushong by this man George E. Hall.

On Wednesday morning, March 27th, I visited Eureka, and had a conference with Dr. Higgins, the County Health Officer, who informed me that at a meeting of the County Health Board they made a special request that I should visit Reece, examine the small-pox cases, give my opinion as to the quarantine, and give any suggestions as to the further management of the cases that I thought best. I took the noon train on the Missouri Pacific Railway, and went west ten miles to Reece, the first station, had a conference with the Mayor and Marshal of the town, and visited all the families where the disease was prevailing.

The first case was that of Jacob Abbott, aged 30 years; was never vaccinated; came from Arizona January 10th; stopped in Reece at a boarding-house kept by a family named Landreth; was taken sick with small-pox January 18th, and had a severe type of a confluent form. This man, Jacob Abbott, when he was first taken sick was visited by his brother, Frank Abbott, who lived on a farm seven miles southwest of Reece, contracted the disease from him, and communicated it to his entire family, as will be seen subsequently in this report.

*Second Case.*—Mary Landreth, living at the boarding-house, aged 18 years; was never vaccinated; taken sick February 2d; had confluent small-pox.

*Third Case.*—Mrs. Olive Landreth, aged 50 years; was never vaccinated; taken sick February 3d; had discrete small-pox.

*Fourth Case.*—Eliza Landreth, aged 16 years; was never vaccinated; taken sick February 3d; had discrete small-pox.

*Fifth Case.*—Oscar Landreth, aged 14 years; was never vaccinated; taken sick February 3d; had confluent small-pox.

This constituted the entire Landreth family who kept the boarding-house, except the father, an aged gentleman, who had previously had the small-pox.

*Sixth Case.*—Frank Abbott, a farmer living seven miles southwest of Reece (a brother of Jacob Abbott), aged 24 years; was never vaccinated; taken sick February 6th; had confluent small-pox.

*Seventh Case.*—Maggie Abbott, wife of Frank, aged 17 years; was never

vaccinated; taken sick February 14th; had confluent small-pox, and during the most critical period of the disease gave birth to a living child.

*Eighth Case.*—Harrison Abbott, son of Maggie Abbott, had confluent small-pox when four days old; both mother and child recovered, and are doing well.

*Ninth Case.*—Bert Abbott was vaccinated when a child; taken sick February 14th; had a mild attack of varioloid.

*Tenth Case.*—Hattie White, aged 7 years; was never vaccinated; taken sick February 16th; had confluent small-pox.

*Eleventh Case.*—Maud White, aged 4 years; was never vaccinated; taken sick February 14th; had discrete small-pox.

*Twelfth Case.*—Mrs. Mollie White, mother of the children, aged 25 years; had been vaccinated; taken sick February 13th; had a mild attack of varioloid.

*Thirteenth Case.*—W. J. White, the father, aged 32 years, who had been vaccinated when a boy and had a good scar, was taken sick February 13th; had a fever in a very mild form with a few pustules, being varioloid of the mildest form.

There were two other children of the White family, who were vaccinated at the time the first child of the family was taken sick. The vaccination on both took nicely, and they had no symptoms of the disease; thus showing the power of vaccination in warding off the disease, even when exposed to the persons affected with the disease in the same house and in the same room, and thus showing the power of resistance that vaccination has over the small-pox germ.

*Fourteenth Case.*—Nora Preston, aged 19 years, who had visited the Landreth family when Abbott was first taken sick, but before the nature of the disease was fully known, was never vaccinated; taken sick February 21st, and had discrete small-pox.

The fifteenth and sixteenth cases were those of her father, an elderly gentleman, mayor of the town, and Mrs. Preston, her mother, both being vaccinated when young; had slight fever and a few pustules, showing the system was not entirely protected, and had varioloid of a very mild type.

*Seventeenth Case.*—Pearl Irons, aged 3 years, was taken sick March 1st; was never vaccinated; had semi-confluent small-pox.

*Eighteenth Case.*—Schuyler Irons, aged 8 years, was never vaccinated; taken sick March 13th; had small-pox.

*Nineteenth Case.*—Mrs. Jennie Irons, the mother, aged 32 years, was vaccinated when young; had a good scar; had a slight fever on the 13th of March, a few pustules following; a very mild type of varioloid.

*Twentieth Case.*—Jacob Irons, the father, aged 36 years, was vaccinated when young; has a good scar; had very slight fever February 13th, followed by a few very small pustules; a very mild type of varioloid.

*Twenty-first Case.*—Effie Irons, aged 12 weeks; was never vaccinated;

taken sick March 12th; had confluent small-pox of a malignant type, and died March 23, before the eruption fully developed and from the virulence of the poison.

This epidemic of 21 cases and one death resulted from the disease being introduced by Jacob Abbott, who contracted the disease in Arizona and introduced it into Reece while at the Landreth boarding-house.

As will be seen above, the disease prevailed in five families—four in the town of Reece and one in the country, and every member of each family had the disease in some form, except old Mr. Landreth, who had had the disease when quite young, and the two White children, who were protected by vaccination after exposure.

I wish to enforce upon the reader the remarkable result attending this endemic of small-pox. This was due mainly to the rigid and efficient quarantine, isolation, vaccination, and thorough disinfection by the city and county authorities as soon as the disease was positively known; chiefly due to the vigilance, care and attention of the county health board; for nothing was omitted in the way of supplies, nursing and attention that all the families needed in order to make them comfortable, and at the same time to thoroughly and promptly stamp out the disease at as early a date as possible.

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#### SMALL-POX IN MONTGOMERY COUNTY.

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BY J. T. DAVIS, M.D., ELK CITY, COUNTY HEALTH OFFICER.

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Small-pox was brought to Montgomery county this year by G. W. Rowley, who resides on a farm near Jefferson, Fawn Creek township. Mr. Rowley spent the months of June and July in California, returning near the close of the latter month, by way of Denver, Colorado, at which place he remained a few days, stopping at the Commercial Hotel. While there, he noticed confusion with reference to some sick persons at the hotel, but no mention was made of small-pox. He is inclined to think this was the place of exposure. On August 1st he felt sick; had pain in his limbs and back, and the next day sent for Dr. Bradley, who treated him for malaria; but the next day he discovered some pimples, and the doctor was sent for again, who did not attach much importance to the eruption. He got better, and went out with a threshing-machine while the eruption was still out. He is 47 years old; was vaccinated when 11.

But little was thought of the matter until his son Lewis, about August 10, began to complain much like his father, and in a short time an eruption made its appearance. Bradley was again sent for, but about this time the neighbors became alarmed, and, determined to know what was the matter, sent for Dr. B. F. Masterman, of Independence, who visited the young man and found him suffering from variola, and his father from varioloid. He



placed them under temporary quarantine, and reported the facts to this office. This created much excitement; some seemed to think Dr. Masterman was incorrect in his diagnosis, and demanded the health officer to visit the family, which was done during the pustular stage in the young man's case. Assurance was given them that Dr. Masterman was correct, and that it was small-pox. He was confined to bed about three weeks, and was about three weeks more convalescing. He had never been successfully vaccinated.

Mrs. Rowley and her daughter both had varioloid lightly; both having been previously successfully vaccinated.

The methods resorted to, to prevent the spread of the disease, were: complete isolation of the family; free fumigation and strict cleanliness, both personal and domiciliary. The house was flagged, and no one allowed to leave or enter the premises until the quarantine was declared off, at which time the whole house was disinfected and fumigated, and the clothing and bedding treated according to the directions of the State Board of Health. So far as was known, all those exposed were vaccinated.

Strange to say, not a single case developed outside the family; however, the season of the year, and those exposed usually being in the open air at the time, coupled with prompt vaccination, may explain it.

#### SCARLET FEVER IN SHAWNEE COUNTY.

BY W. A. WILLIAMSON, M.D., TOPEKA, COUNTY HEALTH OFFICER.

*J. W. Redden, M.D.*—DEAR DOCTOR: During the past year 149 cases of scarlet fever have been reported in the county. Nineteen scattered cases were reported from January until July. With the beginning of August, the disease suddenly increased; 32 cases were reported for the month; 20 in September, 36 for October, 13 for November, and 29 for December. In nearly all cases the type was mild, so much so that the affection was considered trivial; no physicians called, consequently no quarantine and unnecessary spread of the disease.

In one addition, a single untreated case, supposed by the parents to be hives, attended school through the peeling stage, and was the means of spreading the disease in twelve or more families. I visited the district later on, closed the schools and established a quarantine. All the cases in the city and county have been quarantined, a red card placed on the buildings, all children in the family kept from school and the quarantine enforced, until each affected member had entirely scaled off, when thorough sulphur fumigation was done. As far as I can collect from returns, only five deaths have resulted from the 149 cases. In twelve families, two members were attacked; in four families, three members.

## SCARLET FEVER IN ROOKS COUNTY.

BY L. B. POWELL, M.D., STOCKTON, COUNTY HEALTH OFFICER.

*J. W. Redden, M.D., Topeka, Kansas*—DEAR DOCTOR: As requested by you, I herewith submit my report of an endemic of scarlet fever that made its appearance in Stockton, Rooks county, on the 1st of October, 1889, continuing until December 31st, 1889. The first case, a child six years old, had what is termed scarlatina simplex; the attack commenced with a chill, followed by vomiting. On examination, I found a vivid redness of the fauces; the tongue presented the peculiar appearance of a ripe strawberry; the eruption, consisting of minute specks, made its appearance on the second day; there was considerable swelling of the tonsils, with an abundant ash-colored exudation. The submaxillary and lymphatic glands were swollen and tender. Pulse-rate from 110 to 130; respiration about 30 per minute. There was suppression of urine from the beginning, resulting in acute nephritis and albumenuria.

During the three months' time that the disease prevailed here, there were fifty children of all ages stricken down with it; but owing to the mildness of the disease, good sanitary conditions, and skillful physicians, there did not occur a single death. The description of the above case is a fair average of all; some in a mild form, others worse. Quite a number were affected with an external otitis, and some with articular rheumatism, as a sequel; in a very few cases there was slight œdema.

During the year there have been a few cases of typhoid fever, and in every case the cause could be traced to a lack of observance of proper sanitary regulations. Health office literature has been freely scattered over this county, and the people are beginning to take a great interest in sanitary work; and if the good work goes on, the poor, under-paid health officer will soon have his wages raised and be a great man.

## REPORT ON DAIRIES IN SHAWNEE COUNTY.

BY W. A. WILLIAMSON, M.D., TOPEKA, COUNTY HEALTH OFFICER.

TOPEKA, KANSAS, January 1, 1890.

*J. W. Redden, M.D., Secretary*—DEAR SIR: I desire to present a short report on the condition of the dairies in Shawnee county. During the spring and summer months I investigated seven of the largest. In four of the buildings box drains for collecting the discharges were used, flushed and cleaned from one to three times a week. The ventilation was good in all.

Dry feed is used in winter, grass and dry feed in summer. Two of the seven dairies used at times the refuse from a starch factory, claiming that none in a fermenting condition was used. The water used on all the farms was from wells, which in all but one case were so placed as to cut off all danger of contamination from the barn-yard.

The herds all appeared to be in a healthy condition, only two cases of disease being reported. These animals were separated from the herd, and the milk not used. All the proprietors talked with appeared anxious to use all precautions for obtaining pure milk, and readily agreed to such suggestions as I made.

## FINANCIAL AND PROPERTY STATEMENT.

## EXPENDITURES OF THE STATE BOARD OF HEALTH,

FOR THE FISCAL YEAR ENDING JUNE 30, 1889.

The appropriation for said fiscal year for the expenses of the State Board of Health and the Secretary, including the salary of the Secretary, was \$4,500. Classified statements of the expenditures of the Board during said fiscal year are as follows:

Expenses of members attending meetings of the Board, sanitary conventions, and State charitable institutions.....	\$413 87
Office rent.....	240 00
Postage.....	345 00
Janitor for office.....	60 00
Express charges.....	153 50
Gas.....	4 40
Clerical labor.....	192 00
Expenses of members and committees, visiting small-pox epidemics and assisting in quarantine.....	490 15
Cash for cartage.....	75
Cash for 20 copies of Daily Capital.....	1 00
Dr. Reid Alexander, for chemical examinations.....	180 60
One Crown type-writer.....	20 00
Telegrams.....	8 50
Secretary's salary.....	2,000 00
Balance unexpended in the hands of the State Treasurer.....	390 23
Total.....	\$4,500 00

## LIST OF BOOKS IN LIBRARY.

Books and other publications have been received by gift and exchange, and placed in the library of the Board, during the year ending December 31, 1889, as follows:

- 1 volume, Biennial Report of the West Virginia State Board of Health. 1887-88.
- 1 volume, Sixth Annual Report of Board of Railroad Commissioners of Kansas. 1888.
- 1 volume, Twelfth Annual Report of New Jersey State Board of Health, and Report of Vital Statistics. 1888.
- 1 pamphlet, Report of State Board of Health of Massachusetts upon the Sewerage of the Mystic and Charles Rivers. 1889.
- 1 volume, Twelfth Report (Fourth Biennial) of the State Board of Health and Vital Statistics of Minnesota. 1886-88.
- 1 pamphlet, Water Supplies of Illinois and the Pollution of its Streams, by John H. Rauch, M. D., Secretary. 1889.
- 1 volume, Fourth Annual Report of Board of Health, city of Newark, N. J. 1889.
- 1 volume, Manual for the Boards of Health of Massachusetts. 1887.
- 1 volume, Second Annual Report Minnesota State Board of Health. 1874.
- 1 volume, Third Annual Report Minnesota State Board of Health. 1875.
- 1 volume, Fifth Annual Report Minnesota State Board of Health. 1876.
- 1 volume, Sixth Annual Report Minnesota State Board of Health. 1878.
- 1 volume, Seventh Annual Report Minnesota State Board of Health. 1879.
- 1 volume, Eighth Annual Report Minnesota State Board of Health. 1880.
- 1 volume, Biennial Report Minnesota State Board of Health. 1881-82.



- 1 volume, Second Biennial Report of North Carolina State Board of Health. 1889.  
 1 volume, Eleventh Annual Report of Connecticut State Board of Health. 1888.  
 1 volume, Annual Report of the Health Department of the city of Baltimore. 1888.  
 1 volume, Third Annual Report of Pennsylvania State Board of Health. 1887.  
 1 volume, Ninth Annual Report of Illinois State Board of Health. 1886.  
 1 volume, Fourth Annual Report of Michigan State Board of Health. 1876.  
 1 volume, Twelfth Annual Report of Michigan State Board of Health. 1884.  
 1 volume, Fourteenth Annual Report of Michigan State Board of Health. 1886.  
 1 volume, Sixteenth Annual Report of Michigan State Board of Health. 1888.  
 1 volume, Seventh Annual Report of Wisconsin State Board of Health. 1882.  
 1 volume, Ninth Annual Report of South Carolina State Board of Health. 1888.  
 1 volume, Fourth Annual Report of Connecticut State Board of Health. 1881.  
 1 volume, Eighth Annual Report of Connecticut State Board of Health. 1885.  
 1 volume, Report of the Board of Health of Alabama. 1887.  
 1 volume, Sixth Biennial Report of Kansas State Historical Society. 1887-1888.  
 1 volume, Eighth Annual Registration Report of New Hampshire. 1887.  
 1 pamphlet, Proceedings and Addresses at a Sanitary Convention at Hastings, Michigan, December 3 and 4, 1888.  
 1 volume, First Biennial Report of Iowa State Board of Health. 1881.  
 1 volume, Laws of Kansas. 1889.  
 1 pamphlet, Sixth Annual Report of the Superintendent of Health of City of Providence. 1888.  
 1 pamphlet, Thirty-Fourth Annual Report upon Births, Deaths, and Marriages, Providence, R. I. 1888.  
 1 volume, Third Annual Report of Ohio State Board of Health. 1888.  
 1 volume, Third Biennial Report of State Board of Corrections and Charities of Minnesota. 1888.  
 1 volume, Report of the State Librarian of Pennsylvania. 1887-1888.  
 1 volume, Annual Report of the Board of Health of Louisiana. 1871.  
 1 volume, Annual Report of Board of Health of Louisiana. 1873.  
 1 volume, Annual Report of Board of Health of Louisiana. 1875.  
 1 volume, Annual Report of Board of Health of Louisiana. 1877.  
 1 volume, Annual Report of Board of Health of Louisiana. 1878.  
 1 volume, Biennial Report of the Board of Health of Louisiana. 1886-1887.  
 1 volume, Twelfth Annual Report of Wisconsin State Board of Health. 1888.  
 1 volume, Report of the Patho-Biological Laboratory, University of Nebraska. 1889.  
 1 volume, Twelfth Annual Report of the Health Commissioner, City of St. Louis. 1888-89.  
 1 pamphlet, Transactions of Vermont State Medical Society. 1887.  
 1 volume, Thirty-first Report of Vital Statistics, State of Vermont. 1887.  
 1 pamphlet, Report of Proceedings of First Annual Convention of the North Carolina State Sanitary Association. 1889.  
 1 pamphlet, Proceedings of the Quarantine Conference in Montgomery, Alabama. 1889.  
 1 pamphlet, Fifth Annual Report of the Health Department of the City of San Antonio, Texas. 1889.  
 1 pamphlet, First Annual Report of Health Department of the City of Mansfield, Ohio. 1889.  
 1 volume, Seventh Annual Report of Provincial Board of Health of Ontario. 1888.  
 1 volume, Transactions of the Tennessee State Medical Society. 1889.  
 1 volume, Seventh Annual Report of the State Board of Health of Indiana. 1888.  
 1 volume, Twentieth Annual Report of the State Board of Health of Massachusetts. 1888.  
 2 pamphlets, Proceedings and Addresses at Sanitary Conventions, held at Otsego, Mich., May, 1889, and at Tecumseh, Mich., June, 1889.  
 1 volume, First Biennial Report of Kansas State Horticultural Society. 1887-88.  
 1 volume, Forty-seventh Registration Report of Massachusetts. 1888.  
 1 volume, Fourth Annual Report of Maine State Board of Health. 1888.

## ANNUAL REPORTS OF COUNTY HEALTH OFFICERS.

The following is a list of counties from which annual Reports of County Health Officers have been received. These reports should command your attention. Read them carefully, and give them a thorough examination, as they possess important and valuable information, and show evidences of faithful work :

Anderson.	Garfield.	Linn.	Osage.	Sedgwick.
Barber.	Geary.	Lyon.	Osborne.	Shawnee.
Bourbon.	Graham.	Marion.	Pawnee.	Sheridan.
Chase.	Greeley.	Marshall.	Phillips.	Sherman.
Cheyenne.	Hodgeman.	McPherson.	Pottawatomie.	Stevens.
Clay.	Jewell.	Meade.	Pratt.	Thomas.
Cloud.	Johnson.	Miami.	Rawlins.	Wabaunsee.
Coffey.	Kearny.	Montgomery.	Rooks.	Washington.
Decatur.	Kingman.	Nemaha.	Rush.	Wichita.
Ellis.	Labette.	Ness.	Russell.	Wilson.
Ellsworth.	Lane.	Norton.	Scott.	Woodson.
Finney.				

## COUNTY REPORTS.

GARNETT, ANDERSON CO., January 9, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I make the following report as Health Officer, from January 1st to December 31st, 1889.

Number of deaths during the year, 82; number of births, 185; number of burial cases sold, 137; number of marriages, 115.

Having personally examined the poor-farm house, I find it in a good sanitary condition, the inmates faring well. Also having visited the county jail, I find it in a good sanitary condition, being as healthy as anywhere else.

A large number of nuisances have been abated in various parts of the county, which has undoubtedly been a benefit in maintaining health to many citizens; still our sanitary law is very deficient, and should be amended.

We had only two contagious epidemic diseases. The anginosa prevailed to some extent; about twelve cases were reported, with two deaths; but it is now entirely abated. Diphtheria prevailed as an epidemic in a severe form during the year. As near as I can get reports, about 100 cases occurred in the county during the year, with about twenty deaths. The character of the disease was in a severe form; in some, if not all the cases that died, it was in a malignant form, with blood poison, and the exudation in the throat being a dark, dusky color, showing that the disease was of the severest type; but I am glad to report at present diphtheria has nearly abated. But my past experience leads me to say that we may have sporadic cases in the future, and the sooner medical treatment is commenced the better.

I would again call attention to the fact that using pure water is an important factor in preventing diseases.

Quite recently we have had "la grippe," or more commonly known as influenza, among us. The symptoms manifested are some headache, and perhaps aching all over the system, sore throat, some coughing, sneezing, with malaise; but if it does not develop into bronchitis or pneumonia, it is not a dangerous disease. Otherwise our county has fair health.

J. A. HENNING, M.D., *County Health Officer.*

MEDICINE LODGE, BARBER CO., January 31, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you my annual report by mail to-day, which I regret is so brief. Two cases have been reported to me, neither of them fatal. The general sanitary condition of the public buildings and the county is good. There have been no instances of the spread of contagious diseases through the schools by means of funerals, infected clothing, or other articles. The prevalence of influenza over our country has not failed to strike this part of healthy Kansas, and we are having some very bad cases. Many people thought it was nothing but a bad cold, but through carelessness it soon developed into pneumonia; but so far, there have been no fatal cases. Three-fourths of the people are suffering from it; women seem to suffer more than men. I think they stay too close in warm rooms, as outdoor exercise is beneficial.

The County Commissioners and people generally seem to favor the work of the County and State Boards, but do not manifest sufficient interest in the enforcement of all sanitary rules and regulations. The health of the county during the past year has been excellent, and we hope the sanitary work already performed will show even better results during the present year.

Very respectfully, W. H. MOORE, M.D., *County Health Officer*.

FORT SCOTT, BOURBON CO., February 8, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: In submitting my annual report I regret that I am unable to make it more complete. While a few physicians of the county are prompt in sending in reports, quite a number seem to ignore the law altogether.

During the year there have been reported to me 144 births; of these 78 were females and 66 males; 143 were white and 1 colored. I have learned from the undertakers' reports, that there were 145 deaths in this city and county during the past year.

The general health of the county has been unusually good during the year. There were a few cases of scarlet fever during the first two months of the year, but the physicians who had the cases in charge were prompt in establishing quarantine and disinfecting the premises, and thereby prevented the spread of the disease. The number of cases of continued form of fever were few as compared with last year.

There were 59 cases of variola, and 16 cases of varioloid; 54 cases were in the city of Fort Scott, and 21 in the vicinity of Redfield, twelve miles west of the city; 53 were white, and 22 colored; 4 deaths, all white. For the care of the cases in the city a pest-house was provided, two miles north of the city, where strict quarantine was enforced, a competent nurse secured, and everything provided looking to the comfort of the patients. Much credit is due City Marshal Robinson for the prompt and efficient action taken by him in establishing quarantine, and the removal of patients to the pest-house; his labors in this direction were invaluable. The cases in the country occurred in July, and infection was supposed to have been from some person attending a picnic at Redfield on the 4th of that month. As soon as notice was received, Mr. Green, the chairman of the County Commissioners, and myself visited the infected district, and at once had all houses where the disease prevailed quarantined, secured tents and had them put up in a healthy and isolated locality, where all who were in a condition to be removed were taken and cared for. Vaccination was ordered, and rigidly enforced in that part of the county. There can be no doubt that the prompt measures thus taken prevented the further spread of this dread disease.

The County Commissioners are in full accord with the State law, and are ever ready to assist in enforcing all sanitary measures in the county.

Our jail is in a clean and healthful condition, and the general sanitary condition of the county at present is good.

The number of school children in the city and county is 10,130. I cannot give the number vaccinated, but as a rule, the law governing vaccination has been well observed.

The city supply of water is furnished by the Fort Scott Water Co., and is taken from the Marmaton river, and as a rule is well filtered. There are exceptions, however, and especially after fire pressure has been used, at which times the water is evidently poured into the mains direct from the river without being filtered.

Yours truly,

R. AIKMAN, M. D., *County Health Officer.*

COTTONWOOD FALLS, CHASE CO., January 31, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR DOCTOR: It becomes my duty to submit to you this my fourth annual report of Chase county, which is, as before, very unsatisfactory in many respects. First, the physicians and midwives will not comply with the requirements of the law in making returns; and those who do will not make them until the last of the year, and then the reports are far from perfect. Many have not made a single report during the year, and no reports comparatively of marriages from the proper officers.

I am able to report an unusually good condition of health for the past year so far as sickness is concerned. We have had a few cases of scarlet fever and diphtheria; they have appeared as an epidemic, none of which was reported to me; do not know of any deaths resulting therefrom, which accounts for no reports to you from me. Our supply of milk and ice is good, our markets are well supplied with the best of meats. We have had considerable trouble from people throwing dead cholera hogs into the river, it being unbearable at our bridge and mill-pond, and no one can be found as the guilty parties. We caused to be removed and burned eighteen at one time, and now there are as many more. I suggested to the County Commissioners to offer a reward of fifty dollars for the proof leading to a conviction, and I am told the sheriff offered a reward of that amount for such proof, which I am in hopes will lead to a better condition in that respect.

My reports of deaths and vital statistics are very meager, for the reason heretofore stated, which is my excuse for the report at this late date. I entertain the same opinion as advanced in my report of 1888—that there must be legislative enactment fixing penalties for non-compliance with the law, or it never can be effectual. I am still strongly of the opinion that great good can be done by the proper legislation, and ultimately satisfaction obtained from the people. I expect we will have to plod along in the old rut until the next meeting of our Legislature, when I hope something will be done to help us out of the dilemma.

I am very respectfully, your obedient servant,

C. E. HAIT, M. D., *County Health Officer.*

ST. FRANCOIS, CHEYENNE CO., January 3, 1890.

J. W. Redden, M. D.—DEAR DOCTOR: I send you herewith my annual report as County Health Officer for the year 1889.

Whooping-cough has been quite prevalent in the northeast portion of this county during the past eight weeks. There have also been reported to me 5 cases of typhoid fever, 5 cases of scarlet fever, 10 cases of dysentery, and 10 cases of pernicious fever; but no deaths have been reported from either.

There has been no instance of the spread of contagious disease through any of the public schools. The County Commissioners do not seem to appreciate the importance and value of the County Health Board, and therefore do not give that hearty support and encouragement to the County Health Officer which is desired.

The general sanitary condition of the public buildings, as well as that of the county, is excellent. There have been no epidemics; nor have there been any diseases prev-



alent of a contagious type; hence the health of the inhabitants generally throughout the county has been splendid during the year.

F. K. DABNEY, M.D., *County Health Officer.*

CLAY CENTER, CLAY COUNTY, January 14, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you by to-day's mail the annual condensed reports of marriages, births and deaths for the county of Clay for the year 1889.

The birth returns are still very incomplete, but the marriage and death returns may be said to be complete. Hope some measures may be devised whereby the birth returns may be made complete also.

But one physician has registered in this county in the year 1889, viz., T. F. Blake; homeopath; residence, Morganville, Clay county; age 27; born in Illinois; graduated March, 1889, from Homeopath Medical College of Missouri, St. Louis, Mo. One has moved away, viz., Thomas Blackwood. So numerically, we stand as in 1888.

The sanitary condition of the county is good. The number of deaths for 1889 is 147; for 1888, 207. Thus it will be seen there is a difference of 60 in favor of 1889. The number of births for 1889 is 77; the number of marriages 141.

Yours truly, SAM. E. REYNOLDS, M.D., *County Health Officer.*

CONCORDIA, CLOUD CO., January 13, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I dislike very much to make no report at all, so you will please excuse me for this very unsatisfactory and imperfect annual report. I will do the very best I can under the circumstances.

Our physicians and midwives, as well as clergymen, justices of the peace, etc., have almost entirely failed to report the past year. As many as have reported I have registered, and send you a copy. There are no reports of deaths given by any one of our physicians; they, or some of them at least, claim that they are not bound to make any report without some consideration or pay. What shall we do in the premises? I have carefully distributed all the circulars you have sent me on the subject. I very much dislike to prosecute, but if you will issue more circulars this year, imperatively demanding rigid compliance with the law in the matter, I will try and see that everyone receives due notice; after which I will prosecute to the letter any or all that fail to do their duty in the matter.

I have been having some trouble on the hog and hog-pen question at Glasco, and I have tried all the advisory law that I had on the subject, and have so far failed to remove the nuisance; finally, I promised the complainant in the case that I would refer the matter to the Secretary of the State Board of Health, and if there should be any further trouble in the case, I will send you all the written correspondence in the matter.

I believe there is no change in the emigration or migration of physicians to or from Cloud county, except that of C. O. E. Ostregney, M.D., who in the early part of this year returned to Canada, as I am informed, to more fully complete his course of studies. Also, Dr. Pigman has within the last year removed from Jamestown this county to Concordia, Cloud county, which is his present postoffice.

I have received no report this year from the Superintendent of Public Instruction as to the exact number of school children in this county; but I believe it to be about the same as formerly reported to the State Board. There is still nothing done in the matter of vaccination, and I think nothing but a small-pox scare will be sufficient to induce a move in that direction.

We are having a visitation of the Chinese catarrh, Russian disease, Italian fever,

influenza, as more commonly called at this time "grippe;" all or about all are being served — none missing a "grip."

Hoping that my next annual report will be more complete and satisfactory, I remain, yours truly,

L. D. HALL, M.D., *County Health Officer.*

BURLINGTON, COFFEY CO., January 5, 1890.

*J. W. Redden, M.D., Secretary State Board of Health, Topeka, Kansas*—DEAR SIR: In regard to births and deaths, the physicians failed to make any reports; the law has been utterly ignored the last year by physicians. I herewith submit report of marriages.

There have been three deaths from consumption, and twelve from diarrheal diseases reported to me.

The general sanitary condition of the public buildings and the county in general has been very good, and the county has been comparatively free from epidemics and contagious diseases.

Respectfully yours,

WM. MANSON, M.D., *County Health Officer.*

OBERLIN, DECATUR CO., January 14, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual report of births, deaths, marriages, and registration.

Decatur county has been exempt from all diseases or epidemics during the year since the small-pox subsided, and the mortality has been exceptionally mild. There has been a remarkable exemption from all diseases until the latter half of December, when the influenza or "la grippe" made itself felt, though in a mild form as compared with reports published in the newspapers of other localities, and it is safe to say that up to this time, January 14, 1890, fully one-third of the inhabitants have suffered from it in greater or less degree.

The sanitary condition of Decatur county is good. Nature has not been very lavish in her gifts of water, so there are no stagnant pools to generate noxious or malarial gases. An atmosphere whose purity rates A No. 1, with about 3,400 feet elevation above the sea, cannot be improved to any great extent by human agency. Since the small-pox subsided, about May 1st, there has been no interruption of the public schools. Though there have been a few cases of measles, mumps and whooping-cough, they have been kept isolated, and there has been no interruption to the schools.

The general sanitary condition of the public buildings is good, while the health throughout the county is fine. The people are heartily in favor of the county and State Board of Health.

We have a fine system of public water works, which have been in operation since about July 1st. A sample for analysis will be forwarded to the State Chemist this week.

Very truly yours,

A. W. BARTEAU, M.D., *County Health Officer.*

HAYS CITY, ELLIS CO., January 13, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR SIR: I have the honor to herewith present the sanitary report for the past year, of the county of Ellis.

I can only repeat as before, the record is incomplete; incomplete by the reason that there is no interest taken to register births and deaths.

This county has a foreign population of 598 voters, out of 1,400 voters; the majority of these 598 are Russians, and not more than 12 per cent. will employ a physician. It is indeed a blessing that Ellis county is healthy, and has been for years past; but should ever an epidemic occur, the result would prove that sanitary measures are the safeguards of all communities which have been vigilant to adopt these measures.

To the Mayor and Marshal of this city. I wish to acknowledge thanks for the aid given in putting the city in a clean condition. Ellis, also, is very clean; the city authorities there took all precaution before last May to have a clean city.

I am, sir, yours very respectfully, H. B. KOHL, M. D., *County Health Officer*.

ELLSWORTH, ELLSWORTH Co., January 31, 1890.

J. W. Redden, M. D., *Secretary State Board of Health, Topeka, Kas.*—DEAR SIR: I do not send you register of physicians, etc., because we have no new ones in this county. Some of the old ones have left, however.

I am satisfied that we have not nearly a full report of births. Owing to the scarcity of money, I presume, the people have done without the services of a physician whenever practicable, and it seems impossible to get the "old women" to report.

There has been nothing of special interest from a sanitary point of view, so I do not send you a more lengthy written report for publication.

Respectfully yours, ROBERT L. DOIG, M. D., *County Health Officer*.

GARDEN CITY, FINNEY Co., January 14, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: Inclosed please find my report for the year ending December 31, 1889. You will observe that the returns for marriages are from July 1st, that being the time when I received the office. There being no records of former officer, I am not able to make a report for the full year. However, I have been able to collect a number of births as far back as February. The death returns only reach back to July; the records in this county are unsatisfactory, it being very hard to get returns promptly. Physicians are exceedingly negligent and careless in making reports of births and deaths. There have been several marriages, births and deaths that I have been unable to get any record whatever of. The register for physicians I will retain for several days, hoping I may be able to make a complete register of all that are in the county.

There have been reported to me 2 deaths from scarlet fever, 2 from consumption of the lungs, and 4 from cholera infantum.

The general health of the county has been excellent, and the people are in favor of maintaining the State Board of Health and enforcing all sanitary rules and regulations. Yours respectfully, G. L. NEAL, M. D., *County Health Officer*.

RAVANNA, GARFIELD Co., January 15, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: The report from our county for the year ending December 31, 1889, is necessarily incomplete, since many of our settlers have left, including most of our physicians. Under these circumstances, it is impossible for me to give a classified report of the births and deaths.

From the records and other sources of information I find the following: Number of marriages, 11; number of school children at last enrollment, 479; number of births, 31; number of deaths, 5. Of the deaths, one was from typhoid fever; one from pneumonia; two were infants, cause of death unknown; and the remaining: one was a little girl seven years old, who came to her death (according to the verdict of coroner's jury) through maltreatment by her stepmother. A case of insanity having grown out of chorea of eleven years' standing has been sent to the State asylum.

Two cases of hip disease came to my notice. One, with shortened left lower limb to the extent of fully an inch, completely recovered. In this case extension was not employed. The treatment consisted of internal medication only. The remedies were selected according to the *law of similars*. The improvement was uninterrupted till the lost glutal crease was restored, the curvature of the spinal column on ex-

tension of the limb had disappeared, and the shortened limb had grown till it was even with the healthy one, and not a trace of pain in the knee and hip joint, nor of stiffness and limping, remained. The other case is still suffering.

Early last spring we were threatened by an invasion of the small-pox; promptly the local board sent the health officer from house to house, who vaccinated fully three-fourths of our people with fresh bovine virus from the Higgins (Mo.) vaccine farm, which was found very active and caused no unpleasant results. In this connection, I will say, it is my opinion that the best efforts of the local boards of health must remain futile so long as we—progressive State that we are—continue to allow the whims of the individual to decide whether or not we shall be protected. What we need, and speedily should have, is a law giving the local boards of health the power to enforce vaccination, with pure cow-pox virus, whenever the foul destroyer threatens an invasion. If the profession enlighten the public on this important question, in season and out of season, we shall before a great while have a law which, if properly complied with, will truly protect us against a disease, loathsome, painful and destructive in the extreme.

We have a population of about one thousand. Blessed, as we are, with the best of health, residing in one of the healthiest places to be found, with plenty of room for millions of people that will come here, when we have good schools all over the country, and prohibition forever, where already the flouring and the sugar mill are becoming rivals, we have neither time nor inclination to grumble or become bilious. A people enjoying good health, physically, mentally and morally, overcome all difficulties. In the words to be seen on the escutcheon of our fair State: "Ad astra per aspera." Very respectfully, HENRY C. SUESS, M.D., *County Health Officer*.

The following letter explains itself, and is properly a part of the above report:

EMINENCE, GARFIELD Co., January 11, 1890.

To Henry Suess, M.D., *County Health Officer*: There is nothing of interest to report from this part of the county. Diseases are few and yield readily to treatment. We report one case of insanity—Mrs. L., age 35 years, had been afflicted with chorea eleven years. She has been confined three times during the eleven years. Chorea seemed worse and mind weaker after each confinement.

I have attended fourteen confinements during the last year—four boys and ten girls; nothing serious attended any of them. No deaths in this part of the county, and the graveyard at Eminence is a common, over which the prairie dog and coyote roam unmolested.

Very respectfully, L. V. MINER, M. D.

JUNCTION CITY, GEARY Co., January 10, 1890.

Dr. J. W. Redden, *Secretary State Board of Health*—DEAR DOCTOR: I have the honor to submit herewith my fourth annual report as Health Officer of Geary, *née* Davis, county.

You will see by condensed returns that 122 deaths, 132 births, and 80 marriages, have occurred in this county during the past year. My death reports are taken entirely from the burial-case permits returned to me by the undertakers, and are full and complete. It is impossible to get full birth reports. The deaths for 1889 exceed those for 1888 by 13; the births for 1889 exceed the births of 1888 by 4 only.

The general health of the county was better during the past year than the year before, notwithstanding the greater mortality. We had no epidemic during the year. Sporadic cases of measles, whooping-cough, and a few cases of scarlet fever, have developed several times during the year, but have nearly all been of a mild character. We had two cases of small-pox during the year of rather a mild form.

The sanitary condition of our county and city is good. People are taking more pains to clean up their premises than formerly. Everyone is paying more attention to sanitation than formerly, and evidently a better day is dawning.

I made an entire revision of the list of physicians for this county. There have been many changes during the last two years. The list I send you is complete.



I have no means of knowing to just what extent vaccination has been observed in our county, but I do not think there are fifty persons over one year old who have not been vaccinated.

Respectfully,

P. DOUGHERTY, M. D., *County Health Officer.*

HILL CITY, GRAHAM CO., January 31, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR SIR: I am sorry that I am compelled to submit to you such an incomplete report, but it is the best I can do.

The number of births reported to me during the year is 45; the number of deaths 12.

The sanitary condition of the county and public buildings is excellent. It has been remarkably healthy during the entire year, and we have had a freedom from epidemics or fatal diseases. There has been no spread of contagious diseases through the schools by means of funerals, infected clothing or other articles.

The people in general are in full sympathy with the efforts of the State and local boards of health, and will do all in their power to aid in the suppression of epidemics, and the prevention of disease.

When I was appointed Health Officer there was not anything pertaining to the office turned over to me by my predecessor, and I have been compelled to pick up reports promiscuously the best I could. Some physicians of the county have made a few reports of births and deaths, others have not reported anything; yet I cannot find fault with them for negligence. There not being anything in the office in the shape of stationery, they have not had anything to make reports on. From this you can gain some idea of the situation, and the way the office in this county has been conducted. But I am happy to say to you that this county is now well organized—much better than it ever was before. At the last meeting of the County Commissioners they furnished me a book in which to keep a record of the county work, and have authorized me to procure all the stationery and everything that is necessary for the office; and I will promise you if I am alive that I will give a full and complete record and report of Graham county for 1890, as it deserves, because it is one of the best counties in the State of Kansas.

Hoping you will accept this report, I am faithfully and fraternally yours,

B. P. WILLIAMSON, M. D., *County Health Officer.*

TRIBUNE, GREELEY CO., January 31, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: Inclosed please find report of Greeley County Board of Health for the year 1889. The organization of our County Health Board was not completed until May 1st, so I cannot give a complete account of the entire year.

This year has been a very healthy one in this county. There have been 8 cases of scarlet fever, with 2 deaths; 18 cases of diphtheria, with 2 deaths; 37 cases of typhoid fever, with 3 deaths; 2 deaths from consumption of the lungs, and 7 deaths from cholera infantum. Diarrheal diseases have been prevalent in certain localities where there were but few wells of water, and where the supply of water was kept in barrels for use. In reference to cholera infantum, I would state that the diet is quite a productive cause. Fruits and vegetables are scarce, except canned goods, and the few such products as are occasionally shipped into the county from a distance, being received in a nearly spoiled condition, are injudiciously given to children.

There has been quite an epidemic of tonsillitis; the inflammation extending to the tongue, causing a great amount of swelling, attended with considerable pain and difficulty in articulation; the attacks lasting from ten days to two weeks, under the ordinary treatment of such cases, and becoming quite aggravated if neglected entirely.

La grippe visited our county as well as the rest of the civilized world, but in a mild form. But few of the people escaped entirely, while a few were seriously ill by lung complications. I do not know of a single death resulting from it. The general symptoms attending an attack were similar to those of a severe coriza.

There has been no spread of contagious diseases through the schools, by means of funerals, infected clothing, or other articles.

The sanitary condition of the public buildings is excellent. The County Commissioners and people in general are willing and ready to render any aid to enforce the rules and regulations of the State and county health boards.

Hoping to give you a more complete report for 1890, I remain,

Yours very respectfully, F. R. MOORE, M.D., *County Health Officer.*

JETMORE, HODGEMAN Co., January 14, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual report of births, deaths and registration for the year 1889.

There have been reported to me 3 deaths from diphtheria, 3 from cholera infantum, 1 from typhoid fever, and 1 from consumption of the lungs. We have had no prevailing diseases or any epidemics in our town or county during the year just closed. The county has been remarkably healthy during the past year. There were two cases of typhoid fever, but they were imported, the patients contracting the disease while they were east on a visit. There were nine cases of diphtheria reported, but they were all sporadic cases. I carefully investigated the matter at the time, but could obtain no evidence of contagion.

The sanitary condition of the public buildings is excellent, and the people throughout the county during the entire year enjoyed remarkably good health.

Very truly yours, J. K. MILLER, M.D., *County Health Officer.*

MANKATO, JEWELL Co., January 13, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual reports of births, deaths and marriages.

During the year there have been reported to me 13 cases of scarlet fever; 16 cases of diphtheria, with 4 deaths from it; 30 cases of typhoid fever, with 5 deaths; 10 cases of consumption of the lungs; 166 cases of the measles; and 5 cases of cholera infantum; the latter disease has resulted chiefly from improper food and over-feeding.

We are now having an epidemic of influenza or la grippe in a mild form.

The number of school children in this county is 7,753. The sanitary condition of our county is as good as could be expected. Many of our people are living in sod houses and dug-outs, but as fast as their circumstances will admit, they are building frame and stone dwellings. We believe the drinking-water used in this county could be improved by filtering and boiling; and we are convinced that the well-water has a tendency at least to produce diseases of the kidneys, for a large majority of the people coming to this county soon complain of their kidneys, and in a short time sub-acute rheumatism follows. If anything could be done to improve our water-supply and thus avoid the evil effects resulting therefrom, it would produce a revenue far beyond that expended for local and State boards of health.

The outlook for the improvement of the general sanitary condition is good, and the people generally are in favor of the enforcement of all laws and sanitary measures that will result in benefitting the health of the people. Very truly yours,

WALTER CREW, M.D., *County Health Officer.*

OLATHE, JOHNSON Co., January 23, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR DOCTOR: Having already forwarded to you the reports of births and deaths, I herewith send the remaining blanks, filled out according to the best information I could obtain.

The whole number of children of school age in the county is 6,225; of this number, 3,127 are males and 3,098 are females. Of these, there are 4,800 in the schools.

Vaccination is very much neglected; the people themselves, as well as the doctors, vaccinate during a small-pox scare, but there is no system about it.

There are six prisoners in the county jail at the present time. There are at the county infirmary about 15 or 16 inmates. They are well fed and humanely treated, but the building is poor; and such is the case with all our county buildings at present.

Our school-houses in Olathe are four in number, and are very good ones; three of brick and one of stone. Those throughout the county are also very good.

Thirteen cases of scarlet fever have been reported to me, with no death resulting therefrom; some of these cases were so mild as to have no eruption. There were 2 cases of diphtheria reported to me; the first case was imported from another State, and was very malignant; the second case was quite mild; both recovered. There were 5 deaths reported from typhoid fever, and 5 from cholera infantum. There have been a great many cases of measles in the county during the year, and but 1 death reported from it; whooping-cough was also quite prevalent, and 1 death reported from it. As far as my own observation extends, I find these diseases get their start by some one bringing them into some neighborhood or town, and from the first case get into the schools, from whence they spread far and near.

The sanitary condition of Olathe would be greatly improved by a good system of sewerage, or what, in my judgment, would be far superior, a system of cremation for all decaying matter, night soil, refuse, etc.

No contagious diseases have been spread by means of funerals, or by infected clothing or other articles.

The drinking-water in villages and country places is frequently impure, which is often the cause of typhoid fever.

The health of the people generally throughout the county has been very good during the year 1889. The death-rate was very low. True, some of our physicians did not send in their reports, but judging from what were sent, and from the undertakers' returns, I feel safe in saying the death-rate was low.

So far as I know, the people generally would submit to the rules of the State Board of Health when once educated up to them; but our County Commissioners have the "apathy" bad. They will not give any compensation to the Health Officer for services in visiting places where contagious diseases have broken out.

In regard to the September resolution, all with whom I have conversed on the subject think it would be a good thing if properly carried out. We need laws that will compel compensation for work performed, and penalties for duties neglected.

Respectfully yours, C. G. McKINLEY, M.D., *County Health Officer.*

LAKIN, KEARNY Co., January 13, 1890.

*Dr. J. W. Redden, Secretary State Board of Health*—DEAR SIR: Please accept my report, meager as it may appear. It seems almost an absurdity to have a health officer in this part of the country. The sanitary conditions of this county are perfect; could not be improved.

There is no disposition on part of physicians to observe county health regulations. Only one physician has made reports to me. Only three practicing physicians in this county. You will find only two names in my registration for physicians. There is another physician in this county, but I have failed to see him, hence could not obtain his standing in the medical profession.

Vaccination not attended to in any respect. None sick in this county, and hence do not see the propriety of attending to it.

Number of children in school in this county, about 200. In fact, the country is about depopulated from the unfavorable atmospheric conditions of the climate.

There have been a number of deaths and births in this county. Number of births, 18; number of deaths, 8; number of marriages, 15. If I am to remain County Health Officer for the ensuing year, shall make a better report than the present one.

Yours very respectfully, C. C. LOVIN, M. D., *County Health Officer.*

KINGMAN, KINGMAN Co., February 1, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual reports for the year 1889, from which you will see there have been returned to this office 149 births, 39 deaths, and 88 marriages.

The number of children of school age in this county is 4,394. There have been reported to me 10 cases of typhoid fever, 6 of diphtheria, 5 of pulmonary consumption, and a few cases of cholera infantum.

The general sanitary condition of the public buildings and the county has been excellent. Our jail is in good condition, and at the close of the year there was no criminal contained in it.

There have been no instances of the spread of contagious diseases through the schools by means of funerals, or by means of infected clothing or other articles. The County Commissioners are willing to render any reasonable assistance in enforcing the rules and regulations of any sanitary measures, while the people in general are anxious to see everything carried out that will prevent disease, promote health, and protect the people. Very truly yours,

E. W. HINTON, M. D., *County Health Officer.*

OSWEGO, LABETTE Co., January 31, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I have to report that, so far as I have been able to learn, the health of this county has been fairly good during the year 1889. There have been reported to this office 138 births, 80 deaths, and 181 marriages. There have been 3 cases of scarlet fever reported with no deaths, 2 cases of diphtheria with no deaths, and 9 cases of consumption of the lungs, while there have been 5 cases of deaths reported from typhoid fever, and 5 from cholera infantum. There have been no instances of the spread of contagious and infectious diseases through the schools, or by funerals, or by means of infected clothing, or through carelessness. The general sanitary condition of the public buildings and the county is excellent.

The vaccination rule has never been very well observed, and has not been called to the attention of the people during the last year. The registration rule has been complied with in every instance of which I have knowledge. Six physicians and one midwife have registered during the year. I have not learned of any who have failed to do so.

There are about 10,000 persons of school age in the county; none were vaccinated during the last year. About 6,000 have been previously vaccinated, and about 4,000 never were vaccinated.

A few cases of diphtheria and scarlet fever have been reported to me from Mound Valley and Oswego. In each instance prompt isolation, quarantine and disinfection checked the further spread of the disease. Whenever the rules and regulations of the State Board are brought to the notice of the people they comply with them readily, submitting to isolation, quarantine and disinfection in cases of contagious disease without a murmur.

Our present Board of County Commissioners seem to favor any movement tending to increase the safety of our people, or to improve the sanitary condition of the county.



Our water-supply is from wells and cisterns. Parsons and Oswego each have water works supplying them with water, Parsons obtaining her supply from La-bette creek, and Oswego from the Neosho river. But, even in these towns, most persons use well or cistern water for drinking and culinary purposes.

Our county is rolling, and intersected by numerous watercourses; this, together with a porous subsoil, gives us excellent natural drainage. We have no other, except at Parsons, which has a system of sewerage. How satisfactory it is I cannot say.

The ice used during the year was manufactured. I am unable to say what effect it had upon the public health; I have, however, heard no complaint about it.

Our meat, milk and vegetables are supplied by local dealers, whose reputation insures us a good and wholesome supply.

I am, very respectfully, E. E. LIGGETT, M.D., *County Health Officer.*

DIGHTON, LANE CO., January 6, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I have the honor to submit to you this my second annual report. No physicians nor midwives have registered in this county during the year 1889; none having moved into the county so far as I have been able to learn.

The number vaccinated during the year is estimated at 350, very many of whom had been vaccinated previously. Have no means of getting accurate information on the subject. Number of school children about 800.

We have had no epidemics of contagious or infectious diseases; in fact, the general health of the county has been remarkably good.

I think the returns of marriages are complete, and those of deaths nearly so; but nearly half the number of births is not reported. The death reports are obtained mostly from the undertakers, as most of our doctors don't send in their death reports, and the same may be said of some of them in regard to birth reports. So far, the midwives have sent me no reports whatever.

Yours very respectfully, F. L. ROWND, M.D., *County Health Officer.*

MOUND CITY, LINN CO., January 14, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual report for the year 1889.

There have been reported to me 2 deaths from typhoid fever, 4 from consumption of the lungs, and 6 from cholera infantum. During the fall and early part of winter there were as many as 50 cases, which some physicians called tonsillitis, and others diphtheria. I believe they were diphtheria. I had three or four cases which were undoubtedly this disease. There must have been at least 20 deaths among children resulting from this disease.

In the future I shall rely greatly upon the burial-case permits to make death reports from, which I am satisfied will be very complete.

The County Commissioners are in hearty and full sympathy with the County and State Boards of Health, and are willing and anxious to enforce all measures for the prevention of disease and for the protection of the health of the people. The sanitary condition of the public buildings and the county is excellent, and the citizens throughout the county are ready and anxious to do all in their power to carry out all sanitary measures. Very truly yours,

IRA E. COE, M.D., *County Health Officer.*

EMPORIA, LYON CO., January 31, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: During the past year the health of the people of the county has been comparatively good; there has been no epidemic disease of any kind. Fevers of different kinds have been fre-

quent, but not of a contagious character. Scarlet fever and diphtheria appeared a number of times, generally in a mild form. Small-pox appeared in an endemic form at Bushong, being brought there by a man from Kansas City; there were a number of persons exposed to the disease before its type or character was known. Receiving notice from Dr. Kirkpatrick, I visited the place. All persons exposed were quarantined, the constable employed to guard them, preventing any exposure of persons to the disease; by so doing the spreading of the disease was prevented. Thirty-eight persons took the disease; three cases proving fatal, two of them being children. The County Commissioners did everything that was reasonable in their power to prevent the spread of the disease, and for the amelioration of those suffering from it. The cash expenses, amounting to over \$1,500, were paid by the county.

If precaution had not been used, there is no telling where the disease would have stopped, a large number of the people not having been vaccinated, especially children; this was done, however, after the prevalence of the disease became known, and no doubt had its influence in preventing the disease from becoming more general. I might here say that vaccination has not been universal in the county, many preferring to take their chances, rather than submit to have it done. For further particulars I refer you to the report of Dr. Burke, who was finally employed by the County Board to take charge of the small-pox patients.

The reports of deaths have not been returned this year as heretofore. Births have been much better reported, but even they are far from being correct. Of the former only 8 have been reported, while the books of the undertakers show cases furnished at Emporia alone of 347, and even that is not all who have died in the county. The returns from Americus and Allen have not been received, and consequently are not included in the above. If all were reported the number would be greatly increased, showing a great difference between the reports of the physicians and that of the undertakers. I hope such disregard of the law will not occur again in this county. While the records of births are better, yet they are not all reported. It is not unreasonable to suppose that there are as many as there are deaths; if so, there should be 375 births reported, instead of 39, as you will see from the condensed report accompanying this one.

Marriages are not returned; our ministers do not make returns, and our Probate Judge has refused or neglected it. They are like the physicians—they do not like to work for nothing.

I think all the physicians of the county are registered but one, (Dr. Lyon, of Emporia.) There has been a falling-off in numbers in this county since my last report. The number on the roll since 1885 is 54. The number in the county at present is 34; some have died, and a number have moved to other fields of usefulness, showing a decrease in the last four years of 20. One that you have on the list I sent you a few days ago, I am sorry to say, died on last Monday, Dr. Lloyd; his death was caused by "la grippe," or pneumonia superinduced by it. Dr. Short has registered since his death, making up the number.

The sanitary condition of the county, and especially of the city of Emporia, has been improved. The city has natural drainage or sewers, which have been considerably improved, though are not what they should be; yet it is sufficient to remove the superfluous water, which is important from a sanitary standpoint. But they sometimes do too much—they send the poison of one city to that of another. Gas being lighter than air, they often return the poison to where it originated. When compared to the cremation principles they fall short, for the reason that the best sewers that are made only receive in one place to turn the receptacle loose on another. The sewer destroys nothing, but is often a producer of miasmatic poison. The cremation plan consumes and destroys, burning up all slops, night-soil, garbage,

dead animals, etc. A crematory building can be erected for half the cost of a sewer, and is preferable, because it receives and destroys more by far than the sewer removes but does not *destroy*. It leaves nothing to *breed disease*, or *contaminate air, earth, or water*, and the sooner the towns and cities of Kansas adopt the system the better.

The only epidemic we have had is the so-called "Russian influenza," or "la grippe," which appeared in the latter part of November, and still continues with great severity; there have been but few fatal cases. Owing to the prevalence of this epidemic, a description of it seems superfluous. But it seems to be different in different localities. I might say that in this county, from one-half to two-thirds of the people have taken it. The symptoms are varied; generally severe headache, with an aching sensation all over the system, especially in the back; some of high fever, eyes painful and watery, sneezing, with sore throat, sometimes severe cough. In bad cases great prostration, inertia; frequently pneumonia sets in at an early period of the disease; the latter seems to be the most serious form of the disease, and in three cases proving fatal. In bad cases, the nerve centers seem to be seriously affected, which seems to materially retard convalescence. Though painful while it lasts, it is not a fatal disease, but dangerous with pneumonia.

The water facilities remain the same as reported last year. No improvement unless it is in drainage. The ice is obtained principally from the Neosho and Cottonwood rivers, and is as good as river ice generally is; seldom, if ever, pure. Meats are kept, as a general rule, some days before they are sold to consumers. In warm weather, they are kept in refrigerators. Perhaps it is as good as the market will afford. Vegetables are generally well preserved. The milk supply is better than the average; less adulteration, and more care taken in handling, than any place I am acquainted with.

The condition of our jail remains the same as in my last report. The prisoners are generally kept in one large room, heated by means of a stove. There are a few cells for special persons. It is kept as clean as possible, but being in the basement, the ventilation is not good and wholesome; hydrant water. Six persons are inmates; all can read and write. The jail building is a standing monument of condemnation.

There are eleven inmates at the poor-house; there are four who have been adjudged insane; they are well cared for.

The Board of County Commissioners of this county are always willing to do anything in their power to promote and sustain all sanitary laws and regulations that have for their object the general weal of society.

The public buildings, with the exception of the jail and the court house, are not only good, but kept in good condition.

I hope to make a better report (if I continue on the Board) the coming year.

Respectfully yours, R. W. McCANDLESS, M. D., *County Health Officer.*

PEABODY, MARION CO., January 9, 1890.

*Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kas.*—DEAR DOCTOR: In submitting my report for 1889 of Marion county, I regret that it is lacking so much of being a complete report of vital statistics and sanitary conditions. As in past years, we still have not the full coöperation of the medical profession in the county. During the past year but one physician has reported from Marion; none from Florence, Burns, nor Lehigh; very meager reports from Lincolnville and Hillsboro; Peabody has been well reported.

In reference to births, the midwives who are registered report quite regularly, but there are a good many practicing who are not registered.

Of marriages, if those in authority who pronounce twain one were as prompt as

those who pronounce one twain, we would be very materially aided. I have followed your suggestion, and have placed blanks in the hands of the Probate Judge, and earnestly hope for improvement from that quarter.

The Commissioners do not aid us very materially. They have been requested to issue circulars, urging physicians and midwives to report births and deaths, and the outbreak of epidemic diseases; also, urging the importance of such reports. The reply is: "The law is so imperfect, what is the use?"—which, you will allow, is very small encouragement. We have not been supplied with either box or desk in which to keep the books and blanks in proper shape; they seem to go on that broad (?) business principle, "The last must pay all." Hence, no provision for the Health Officer.

We had one report from Marion during November of scarlatina, which seemed to end in one or two mild cases. During March a few cases of diphtheria were reported from Hillsboro. At present, and during the past two months, a good many cases of diphtheria have been reported in this part of the county. A few cases were fatal; some mild cases still remain. Whooping-cough, mumps and measles prevailed to a considerable extent in and about Peabody. This winter these diseases are prevalent in the northern part of our county. No fatal cases reported.

I inclose you herewith a report from the County Superintendent of Public Instruction, and a list of the registered physicians and midwives. We have more, who treat the law with indifference: many women, even in this neighborhood, are practicing and making no report. I trust the law may be amended, and then we can hope for better work.

I think the Probate Judge will aid me all he can to get marriage certificates.

I know much good has already been done in the prevention of the spreading of contagious diseases, as every house in and about Peabody has been flagged where such disease has existed. It is acknowledged that much good has been done, and I feel much more could be done for the public, had we proper legislation.

I inclose also my annual reports of deaths, births, and marriages.

Very respectfully yours, C. A. LOOSE, M. D., *County Health Officer.*

The following is the letter of the County Superintendent of Public Instruction, above referred to:

MARION, KANS., December 16, 1889.

*Dr. C. A. Loose, Peabody, Kansas*—DEAR SIR: Yours received. Would say in reply, that the school law makes no provision for the report of the number of pupils that are vaccinated, or the number that are not vaccinated. Neither does it make any provision for any report as to the length of time, if any that the schools were dismissed on account of epidemics.

The number of male children in the county is 3,894, and female 3,522, making a total of 7,416. I think the most of the school children have been vaccinated, and the older ones twice.

Respectfully, D. B. VAN OSTRAND, *County Superintendent of Public Instruction.*

WATERVILLE, MARSHALL CO., January 13, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I send you my annual report of births, deaths and marriages, and such other facts as are of interest, as requested.

During the past year no epidemics or endemics have been reported, and each town and village was personally visited during the heated term, and with but two exceptions their sanitary condition was good.

Marysville and Blue Rapids are supplied with water from the Big Blue river, while the smaller towns throughout the county obtain their water-supply from wells, and it is generally good and pure. The supply of vegetables and milk is good, and the meat healthful throughout the county; while the supply of ice furnished the consumers in the county is unusually good. The time is not far distant when the



question of drainage or sewerage will present itself to the cities of Marysville and Frankfort, by reason of their peculiar situations; and even some of the smaller towns will be forced to protect their water-supply from contaminating influences of water-closets and cess-pools. Of the nine cases of typhoid fever reported, two were traced directly to the contamination of water from surface drainage.

The Board of County Commissioners, having the present and future welfare of the people of the county at heart, give me every encouragement and assistance and have shown considerable interest in the sanitary work, and are in full sympathy with the State Board, and desire to see its rules and regulations enforced.

The sanitary conditions of the county buildings, with the possible exception, are good; and as a prospective change is talked of, no effort for improvement was suggested. The ventilation of a majority of the school buildings is good, while in some it is deplorable, and suggestions have been made to the various boards which if carried out will result in great good.

Vaccination throughout the county has been general—averaging two-thirds of the entire population of the county.

During the year the reports from physicians have been prompt, especially births; while the reports of deaths were in most cases obtained by the return of the burial-case permits from the undertakers; and with the exception of three. Physicians and midwives are in hearty sympathy with the State Board, and render much valuable assistance. Two or three cranks ignore the law, but during the coming year they will report or the size of their wallet will be considerably lessened; our County Attorney says he is after them if necessary.

In the return of marriages, our Probate Judge (and he's a dandy) hands me the returns every 30 days, and you see by my report that they are full and complete. How he obtains them is hard to explain; but he gets them, and that is all that is required.

In conclusion, permit me to say, that the work for the past year has been extremely satisfactory and pleasant, and the prospects for much greater work during the year are very bright; and as the law was made to benefit and protect the physicians of the State, and although as it now stands is very deficient, yet, if by our labors we can show the people that we are alive to their interests, and work to that end—although under great difficulties—public sentiment, by reason of such work, will force our Legislature to enact laws which will give us all the protection required.

Yours truly,

H. HUMFREVILLE, M. D., *County Health Officer.*

McPHERSON, McPHERSON Co., January 18, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR SIR: Inclosed find a condensed report of the work of this office for the year ending December 31, 1889. I regret exceedingly that it is not more full and complete; but such has been the nature and lack of returns from the field as to utterly preclude the possibility of proper annual returns to your office; but we have done the best we well could with the material in hand. When this work was passed into my hands, about the 1st of last May, there seemed to be but one physician (O. W. Baird, of Marquette), and one undertaker (G. H. Maltby, of this city), that were making any effort to comply with the law and requirements of the State Board. I at once collected a list of the post-offices, and through the postmasters a revised list of the physicians and midwives of our county, and opened a personal correspondence with each of them. I also availed myself of the columns of our county papers as an educational force, setting forth the objects and methods of the Board, and calling attention to the fact that their careful coöperation was indispensable, etc.

Through these methods and a personal interview with all concerned, as far as I had opportunity, I have succeeded, toward the latter end of the year, in getting all the undertakers and most of the physicians in line. There are, however, a few physicians who as yet ignore or neglect the claims of the Board; and especially the death reports have quite generally been neglected. Physicians in some instances feel more inclined to report births than deaths, (perhaps because they think there is more glory for them in it.)

The health of our people upon the whole has been very good; a comparatively few cases of measles, scarlet fever, diphtheria and typhoid fever have prevailed in various parts of the county, but almost universally of a mild type; a few deaths have however been reported from these causes. There have been no extraordinary symptoms developed in connection with these cases.

La grippe is laying his hands on our people quite generally, but in such mild form as to create little excitement, more than to be a source of general remark, and in most cases is but slightly differential from the usual colds of the season; a few cases, however, are more or less severe, and one case supposed to be complicated with this disease (a lady of about 45 years) has proved fatal.

While there is doubtless room for improvement in many directions and places, the sanitary condition of our county may with propriety be said to be good.

Respectfully submitted. J. E. ROUTZ, M. D., *County Health Officer*.

MEADE CENTER, MEADE CO., January 31, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR DOCTOR: I send herewith my annual report for 1889. There were reported to me during the year 24 births, 8 deaths, and 23 marriages; 3 deaths have been reported from consumption of the lungs, 1 from typhoid fever, and 2 from cholera infantum.

There has been no spread of contagious diseases through the schools, or by means of funerals, or by infected clothing or other articles, during the past year. The general sanitary condition of the county and public buildings is good. The health of the county has been excellent during the past year, and there has been no epidemic disease prevalent.

The County Commissioners are favorably disposed to aid and assist in enforcing the rules and regulations of the State Board of Health, while the people generally are willing to aid in the enforcement of all measures that will have a tendency to suppress epidemics, control and subdue disease, and protect the public health.

Very truly yours, C. BUTTON, M. D., *County Health Officer*.

FONTANA, MIAMI CO., January 14, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR SIR: I send my report to-day. I cannot give you the number of contagious diseases that have prevailed in the county, because the physicians will not report them to me; there are some that will not report anything. Dr. Fisher of Hillsdale, J. D. Walthall of Paola, and Dr. Morrison of Hillsdale, have not reported, and some others.

Seven deaths from scarlet fever, four from diphtheria, nine from typhoid fever and cholera infantum have been reported to me. The sanitary condition of the public buildings, and of the county generally, has been excellent.

Dr. B. R. Smith registered in March, 1889. There was one more registered, but he died soon after, at Hillsdale. I cannot give the names of those who have not registered.

GEO. W. ROBINSON, M. D., *County Health Officer*.

ELK CITY, MONTGOMERY CO., January 16, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR DOCTOR: A few days ago I sent you my annual report of births, deaths, and marriages. To-day I send you such other facts and reports as you request. Total number of marriages re-

ported, 235, which I think almost complete; birth certificates returned, 168, incomplete; death certificates, 40; perhaps 25 more should have been returned. I have hard work to get the vital statistics report as complete as I do, and will be glad when the physicians coöperate in this matter with a willing hand.

The County Commissioners give me all the assistance they can, and are in full sympathy with the work. The Probate Judge assists me willingly in getting the marriage returns.

Of the 7,782 scholars on the rolls in this county, less than one-half have been vaccinated. Many were vaccinated during the summer on account of small-pox having been brought into the county. The registration of physicians sent you was taken from the County Clerk's register kept for that purpose. The majority of our physicians have registered, and report births and deaths occurring in their practice; however, quite a number disregard the law, and cannot be persuaded to make reports.

Our jail is in good condition. Last spring we found some filthy persons had been admitted, scattering pediculus capillus and pediculus corporis profusely among its inmates. After a thorough renovation, we (the County Health Board) ordered a few cheap suits of clothing and a bath-tub to be placed in a convenient place in the jail, and every new-comer to receive a bath, and if filthy, a change of clothing, until his could be cleaned and disinfected. The inmates are required to bathe at regular intervals. This has secured unprecedented cleanliness.

Our county poor are well provided for by Mr. Richcreek, who takes care of them by the week. I think it would be much better had we a county poor-farm—the proceeds of which would materially assist in caring for the poor—upon which permanent buildings could be erected with reference to convenience, comfort, and health. This is a matter which ought to receive serious consideration by the people of Montgomery county.

The general health in the county during the year has been good. A few cases of typhoid fever exist every year. Mumps and whooping-cough have been with us this year, but have not added much to the list of fatal cases. The sanitary condition of the county is good, and the people seem willing to observe the law when it is pointed out to them.

I have no suggestions to make at this time, only that the blanks for the return of deaths and births should, I think, be small enough to carry in the pocket, for convenience in obtaining the record.

Yours truly,

J. T. DAVIS, M. D., *County Health Officer.*

CENTRALIA, NEMAHA Co., January 15, 1890.

J. W. Redden, M. D., *Secretary State Board of Health*—DEAR DOCTOR: Inclosed please find my report for the year ending December 31, 1889.

There have been reported to me but one death from scarlet fever, one from diphtheria, one from typhoid fever, four from consumption of the lungs, and six from cholera infantum.

During the year we have had no epidemic or special disease of prevalent character. The sanitary condition of the public buildings and the county generally has been excellent.

The County Commissioners and the people are willing to render any aid and assistance to the County and State Board of Health that will enforce all sanitary regulations and measures for the interest of the public health.

You will observe that the birth reports are not as full as they were last year. We need more power and authority in order to make the vital statistics more complete, satisfactory and interesting.

I have instructed the County Clerk to send you a copy of the physicians registered during the year 1889. Very truly yours,

A. J. BEST, M.D., *County Health Officer.*

NESS CITY, NESS CO., January 30, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: Inclosed please find my annual report, as well as annual reports of births, deaths, marriages, and registration, for the year 1889.

The number of births reported to me during the year was 88, number of deaths 49, and number of marriages 37. While I am aware that the returns do not represent full facts, I must say, under the circumstances, that I am well pleased with the result. Some few of the physicians have not yet registered, and some are very slack in making returns of deaths and births. The reports of undertakers have been quite a help to me in making my report of deaths, as their reports are quite regular, and I think complete.

The only epidemic we have had in our county was scarlet fever, which was of a mild type, and confined to a certain locality.

The general sanitary condition of the public buildings and the county is excellent. There has been less sickness than usual during the past year.

The County Commissioners are ready and willing to aid in carrying out the rules and regulations of the State Board, while the people appreciate the efforts of the county and State boards of health in enforcing all sanitary measures.

Very truly yours, J. N. VENARD, M.D., *County Health Officer.*

NORTON, NORTON CO., January 13, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: In presenting my annual report for the year 1889, I have not much to say, only in regard to one subject, which I consider a very important one. That is concerning the small-pox which broke out in our city in the months of April and May last. We had in all, seven cases. The first appeared on the 14th day of April. This case contracted the disease in Oberlin, Kansas. Some little time prior to his coming down, he came to this city and put up with his brother-in-law, Mr. Cobb. In due time he was taken sick. A physician was called, and on the third or fourth day of his illness the attending physician noticed a peculiar eruption on his face. The physician at once came to me and said he had a peculiar case, and wanted I should go with him and see what was the matter. Upon my arrival at the bedside of the sick man, I gave him a careful examination, and found that the case was one of small-pox. At once I quarantined the house in which the case was in, and made a thorough search to ascertain who had been exposed. All dwellings in which persons lived who had been exposed were quarantined until all possible liability of their coming down had entirely passed off.

With the assistance of the Mayor, Mr. Hazleton, we erected a pest-house, a mile from the city, in a lonely place; then moved the sick man and the entire Cobb family, together with their furniture, into the pest-house. Had the house from which they were moved, fumigated and thoroughly cleansed, and did not allow persons to go to the house for several months. Everything connected with the entire management of the cases was done with such a thorough system of cautiousness, with a view of preventing the spread of the disease, that outside of these seven cases not one person was attacked with it.

In presenting this subject, the point I wish to make is this: I think that our people, in this one instance, highly appreciate the value of boards of health, for without them, contagious diseases would have an unbounded sway before the city authorities could take proper steps toward quarantining against them—thereby



causing a great loss of life, and a general depression in the business affairs of the cities in which such a calamity might break out. The entire expense of those seven cases was only a thousand dollars, and we have our pest-house left.

I am quite sure that in other localities where small-pox broke out, they from some cause did not come off so cheaply, and without a death. Every case of ours recovered. So much for undertaking and putting in force the rules which prevent the spread of contagious diseases. Yours, etc.,

E. M. TURNER, M.D., *County Health Officer.*

BURLINGAME, OSAGE Co., January 14, 1890.

*Dr. Redden, Secretary State Board of Health*—DEAR SIR: To-day I send you the remainder of returns, which are presumed to be correct; this is true as far as the material furnished. Statistics are of no value unless correct. I am not going to manufacture figures for the benefit of the doctors of Osage county. I present only the meager ones on hand. Doctors report under protest. It requires circulars and private letters to get what we have. One-half of the returns of the births and deaths have been received, filed, recorded and tabulated this month, and those covering every month of the year. So much work when confined to the short space of 10 or 15 days, with other duties, is not, as a rule, well done.

We report, for the year: Deaths, 60; burial permits, 168; births, 178; marriages, 4; school children in the county, 9,385. No report from any physician in the county in regard to vaccination since blanks were first sent out, more than four years since. No physician registers unless importuned, by letter or otherwise.

The people in general pay no attention whatever to the rules and regulations of the State Board of Health. I think they know little if anything about them, and care, if possible, less.

To lessen the prevalence of disease, I would suggest rigid and specific legislation, and as rigid enforcement of its enactments. This should apply to the duties of the executive officers of the law, qualification of physicians, and punctual observance of the citizen. No branch of education would be of more benefit to the State than making sanitation a part of the curriculum of our public schools. Legislators would do well to look in this direction. The common weal of the State depends certainly as much upon the health of man as upon the brute. History proves that legal processes have "stamped out" preventable diseases—those occasioning most of the deaths. Do this, and you increase the productive power of the State without increasing consumption, giving a large surplus for exchange, a feature of economy our politicians don't "catch on" to.

Our County Commissioners place no obstacle in the way of the County Health Officer. The principal objectors are the doctors, and, so far as I am able to learn, the objection amounts to, possibly, 24 cents a year, postage!

JAMES HALLER, M.D., *County Health Officer.*

OSBORNE, OSBORNE Co., January 14, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual report of births, deaths, marriages, and registration for the year 1889.

There have been reported to me 3 cases of deaths from scarlet fever, 4 from typhoid fever, 7 from cholera infantum, and 11 from consumption of the lungs.

The number of school-children in this county is about 5,500. I do not know the number that have been vaccinated during the year.

More care should be exercised in securing a better supply of water for drinking and culinary purposes. The town should adopt a different system of disposing of

human excrement than that of depositing it in pits and saturating the whole surface of the ground.

The general sanitary condition of the public buildings is good. The health of the county during the year has been excellent. We have enjoyed a remarkable freedom from epidemics and contagious diseases. The people generally are in favor of enforcing all proper sanitary measures for the benefit of the health.

Very truly yours, B. F. CHILCOTT, M.D., *County Health Officer.*

LARNED, PAWNEE CO., January 31, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I hesitated whether to try to make a report; and, after having partially made one, concluded not to send it. My reason for this conclusion is, that the report would be of no value whatever. I have been able to secure reports of births from only two physicians in the county—Drs. Lichtenhales and Arnold. The deaths have been reported by the undertakers, but are perfectly unreliable as to cause of death.

When the epidemic of diphtheria was at its height, I made a very strong effort to secure quarantine and proper disinfection. I was antagonized by two of the leading physicians, and public opinion was manufactured sufficiently to interfere with successfully quarantining, or enforcing the laws relative to contagious diseases. This antagonism was interposed to prevent getting such information as would enable me to make a true report of the epidemic; there seemed to be an objection to calling it diphtheria; it was what was called dachen, etc., and many cases of undoubted diphtheria were not called by the proper name. The correct history of the epidemic cannot be written, and no other kind would be of any value. For these reasons and others, I have concluded to make no report this time.

The documents you sent were distributed where they would be most likely to do good, and I think by the time the next epidemic comes we will be better prepared, and public opinion will be in favor of proper protection to human life. It will seem singular to educated physicians, that proper protective measures should be antagonized by prominent medical men in a community at this late day; but it is a fact.

Respectfully, J. MATHIOT CUMMINS, *County Health Officer.*

MARVIN, PHILLIPS CO., January 9, 1890.

*Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kas.*—DEAR DOCTOR: I this day mail to your address my fifth annual report of marriages, births, deaths, and registration of physicians and accoucheurs.

The health of Phillips county the last year has been good. There are now in this county 16 physicians and accoucheurs registered, and 3 physicians practicing who are not registered.

There are about 5,300 school-children in this county. As to the number who were vaccinated last year I have no means of knowing. We had one case of varioloid last January, which had the effect of causing vaccination and revaccination to be general—almost universal in the towns and villages.

There was a light epidemic of measles and also one of whooping-cough throughout the county last spring, and a few deaths were reported from each. No other disease assumed anything like an epidemic form. During the month of August a family from a neighborhood in Cloud county, in which diphtheria was prevalent, visited a family in this county. About the time of the departure of this family, one of the children was found to have diphtheria. Soon after, a member of the family visited, aged 16, contracted diphtheria and died. As to the result in the Cloud county family, I have been as yet unable to learn.

People generally have a disposition to observe the rules and regulations of the State Board. Some of our physicians make reports promptly, and those who do

not, politely apologize for neglect. There was one prosecution in the county for the selling of diseased meat. No complaint in regard to vegetables, ice, or water supplies.

On May 21st, W. A. Baum swore out a complaint before Justice Townsley against J. E. Wright for selling diseased and unwholesome meats infected with the disease of big-jaw. On Wednesday, the 22d, the case came up for trial by jury and lasted about three days, when the case was turned over to the jury, which returned a verdict of guilty after being out all night. The defendant was fined \$100 and costs, which increased the sum to \$178. For lack of funds to pay the same, Wright was committed to jail. Respectfully,

I. MILEY, M.D., *County Health Officer.*

WESTMORELAND, POTTAWATOMIE Co., January 15, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR SIR: I send you by mail my annual report, as well as annual reports of births, deaths, marriages and registration. My reports are not as full and complete as I could wish, or as they would have been, from the fact that I was only appointed County Health Officer a few months ago.

During the year we have had no epidemic diseases, and what diseases have prevailed have been of a mild type.

The physicians of the county have not made as full returns as they should have done, but I have reason to believe that they will be more prompt and thorough during the present year.

The general sanitary conditions of the public buildings, and of the county, are good. The people are in full sympathy with the objects and efforts of the County and State Boards of Health, while the County Commissioners are ready and willing to render any aid and assistance to enforce all sanitary rules and regulations that will aid in controlling and suppressing contagious diseases, prevent epidemics, and promote public health.

Very truly yours,

J. S. SPANGLER, M.D., *County Health Officer.*

PRATT, PRATT Co., January 24, 1890.

Dr. J. W. Redden, *Secretary State Board of Health*—DEAR SIR: In response to your request for a fuller report from Pratt county, I have the honor to submit the following.

Shortly after my appointment as County Health Officer, I became satisfied that reports of vital statistics were not made as the law required. To this I called attention through the press of the county. This for a time elicited more frequent and regular returns of said statistics; but in a short time there was a lapse to the former condition, and at the last meeting of the Pratt County Medical Society I brought the subject of this neglect before the members then present. This notice brought in many reports, but so late and imperfect were many of them, that my report to you has been delayed. The profession, for some unaccountable reason, seem to be averse to reporting vital statistics, particularly *deaths*.

There have been no epidemics in the county in the year of 1889. The health of our people has been excellent.

The number of pupils in the public schools of the county is some few over 3,000. Vaccination was very generally attended to during 1888; since that time but little attention has been paid to it, there being in the minds of the people no seeming necessity for it. The number of births recorded during the year is 105, some of them being recorded after I sent you the tabulated statement. The number of deaths recorded is 34, many of them being obtained from the undertakers' reports. The number of marriages reported by the Probate Judge is 82.

The causes of zymotic diseases have been materially diminished by the aid of our Mayor, Hon. J. I. Thompson, and our worthy and efficient City Marshal, Paul Truit.

The County Board of Health, together with our people, are in favor of any action of the State Board of Health that will redound to public welfare.

There have been no physicians or midwives registered during the year; and but one physician in the county that I know of that is not registered, Dr. F. F. Stevens, of Cullison, and I have notified him to register. I concur with my predecessor in saying that the law does not give the County Health Officer sufficient power to act in any emergency that may arise for the care of the public health.

A case occurred in this (Pratt) county, as follows: A child died in McPherson county, this State, was buried there, and after some time the body was taken up in McPherson county and brought to Grant township, this county, and there kept in the house with the family several weeks, to the great annoyance of the neighborhood. The County Health Officer was appealed to, who in turn appealed to the County Attorney to show him the authority to act, but the County Attorney could find no power for anyone to act, so it had to be assumed by himself.

Very respectfully, THOS. McELWAIN, M.D., *County Health Officer*.

LUDELL, RAWLINS, Co., January 10, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR DOCTOR: I herewith submit my annual report as County Health Officer, for the year 1889.

There have been reported to me 20 deaths, 18 births, and 16 marriages. There were also reported to me 9 cases of typhoid fever, all in the country, and three deaths from it; 4 deaths from consumption of the lungs, all occurring in the country. Diarrheal diseases in children have not been prevalent, and but 1 death has been reported from them.

No contagious diseases have been spread through the schools, none by means of funerals, nor by means of infected clothing, or through carelessness. As a matter of fact, the health of the county has been excellent during the past year. The sanitary condition of the public buildings and the county in general is good.

The County Commissioners, and people in general, render me all necessary aid and assistance in carrying out rules and regulations in the interest of the public health, and heartily indorse all our labors.

Very truly yours, J. L. CONSTABLE, M.D., *County Health Officer*.

STOCKTON, ROOKS Co., January 15, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR DOCTOR: I herewith send you my annual report of births, deaths and marriages in Rooks county for 1889.

Some 50 cases of scarlet fever have been reported to me during the year, with no deaths resulting from it; about 11 cases of cholera infantum, with no deaths resulting; 5 cases of consumption of the lungs, and no death; 7 cases of typhoid fever, with 3 deaths. There have been in Rooks county a few cases of typhoid fever along the creeks. Dead animals lying in draws and on the creek bottoms were, in my opinion, the cause of the disease. The general sanitary condition can be improved by making cleanliness universal; for filth is the principal breeder of diseases, except those occurring from exposure and the violation of the laws of nature.

I regret that my report is not more complete. In some respects the blame rests with myself, but the great cause of the non-compliance with the law lies in the fact that the law requiring physicians and others to make their reports is unconstitutional, as it requires individuals to devote their time and money for the public good without compensation. A fee of 10 cents for each report would, in my opinion, be adequate remuneration for the services, and then the penalty for violation of the



law could be enforced. For the year 1889 our County Commissioners fixed my salary as Health Officer at \$50. I declined to serve any longer at that price. The Board appointed Dr. E. J. Donnell. I can say for our local authorities that they are all gentlemen deeply interested in the sanitary conditions of the county, and are willing and anxious to pay a sanitarian a reasonable salary; but the office being up for bids, public sentiment compels them to let it to the lowest bidder. As for the citizens of this county, I am convinced that a health officer doing his duty as such, would have the coöperation of nearly all, making the discharge of the duties of the office a pleasant pastime.

In conclusion, Doctor, I desire to thank you for the kind words of approval and encouragement you have given me during the year, and regret very much having to sever our connections. Yours fraternally,

L. B. POWELL, M. D., *County Health Officer.*

LA CROSSE, RUSH CO., February 1, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR SIR: Your request to report first of this month was taken out of my office by a neighbor, and I did not get it in time; so I thought I would inform you of the cause of no report.

Only four reports of deaths and births were sent to me or the Clerk during the year. Physicians say that they are not willing to do the work for nothing, and without a small fee for each record they will not do it. Our physician from Illinois says that physicians do not report one-half the births and deaths there; only report enough to keep out of trouble. I mention this, that the State Board may be prepared to have the weak places in the law amended if possible at the next session of the Legislature.

The case of small-pox at McCracken, which has been reported to you, furnishes evidence that in that case alone, enough was saved and gained to pay all expense, and more, too, than the Board has cost the county.

We have had no widespread epidemic during the year; had a few cases of scarlatina, also some diphtheria, which has been of the croupal type, since the grippe appeared, and very much resembled scarlatina. Paralysis occurred more or less in all the cases I have seen.

I was East during the fall and fore part of the winter, or I should have made some kind of report in December. Yours truly,

W. N. GOODWIN, M. D., *County Health Officer.*

RUSSELL, RUSSELL CO., January 2, 1890.

*Secretary State Board of Health, Topeka, Kas.*—DEAR DOCTOR: My annual report for the year 1889 will not be as full as I would desire it. There are only three physicians of the county reporting their births and deaths. The midwives report the births they attend. Last January, I made complaint to the County Attorney against those failing to make reports; and after examining the law, he decided that he could not convict under the law. I presume that I have reports of very nearly all the deaths in the county, through the undertakers. The report of marriages is a complete failure; our brothers in the ministry are not very prompt. There have been reports of thirty-two deaths sent in, forty births, and two marriage certificates. There has been no physician or midwife registered during the year. Two have moved away, and the rest are in poor pasture.

We have had two cases of well-marked scarlet fever, both in same family. I quarantined the place for three weeks, and stopped it. Through July and August we had a number of cases of intermittent and remittent fever, several persons dying from them. There are a few cases yet along the Saline and Smoky Hill rivers. Why we

should have malarial diseases in this county I am unable to understand, as we have no marshes, no stagnant water, and very little filth accumulation.

I hope the Legislature at the next session will improve our health laws.

This is my fourth year as County Health Officer, and so far as I understand the feeling of our citizens, they favor the strict enforcement of the law.

Very respectfully,

J. W. LONG, M.D., *County Health Officer.*

SCOTT CITY, SCOTT CO., January 14, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual reports of births, deaths, marriages, and registration. There have been reported to me 13 deaths, 26 marriages, and 30 births. There was 1 fatal case of typhoid fever, and 1 from consumption of the lungs reported.

During the year we had an endemic of small-pox, resulting in 12 cases and 1 death. The spread of this disease was through infected clothing, persons being too careless in making necessary changes of apparel. Through vigilance and effectual quarantine, thorough vaccination and disinfection, under the direction of the State Board of Health, the small-pox was speedily and effectually controlled and stamped out, thereby saving much suffering, preventing deaths, and saving to the county thousands of dollars.

The general sanitary condition of the people, as well as public buildings, is excellent. The County Commissioners as well as the people in general are heartily in favor of county and State health boards, and are willing to aid in enforcing their rules and regulations, knowing that great good will thereby result to the people.

Very truly yours,

J. F. BOND, M.D., *County Health Officer.*

WICHITA, SEDGWICK CO., January 31, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR SIR: I send you herewith my annual report, as well as annual reports of births, deaths and marriages for this county during the year 1889. There have been reported to me during the year 428 births, 48 deaths, and 452 marriages; there have also been reported 5 cases of scarlet fever, with one death; 5 cases of typhoid fever, with 2 deaths; and 3 deaths from diphtheria.

La grippe has been prevailing quite extensively in an epidemic form throughout the county, but in a mild type; no deaths have been reported from it.

The general sanitary condition of the public buildings and the county is good. There has been no spread of contagious diseases through the schools, or by means of funerals, infected clothing or other articles.

The County Commissioners are favorable to the enforcement of the rules of the County and State Health Boards, while the people are in hearty sympathy and coöperation with all work that will promote sanitary reform and preserve the health of the people. Very respectfully,

S. B. RENTZ, M.D., *County Health Officer.*

TOPEKA, SHAWNEE CO., January 9, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: Inclosed please find my annual report as County Health Officer of Shawnee county.

The past year has been more than ordinarily healthful; few cases of typhoid and malarial fever, and little diarrheal trouble. Scarlet fever prevailed largely during the latter summer months, in contrast to 1888, when the largest number of cases occurred during the winter. I believe the continued wet weather last season had much to do with continuing the spread of the diseases. Forty-seven cases of diphtheria, with 9 deaths, have been reported. Pulmonary consumption caused 16 deaths, cholera infantum only 6. Nine hundred school children were vaccinated in the city schools alone. One hundred and twenty-five deaths have occurred during

the year; 56 males, 67 females, and 2 not given. Three hundred and seventy-two births have been reported, 208 male children against 162 female; 325 are white and 47 colored.

The sanitary conditions of the jail and poor-house have been good, no serious sickness arising among the inmates.

Respectfully yours, W. A. WILLIAMSON, M.D., *County Health Officer.*

HOXIE, SHERIDAN Co., January 31, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR SIR: I have no report to make this year, other than this: Our County Commissioners did away with the health office last spring, assigning as the reason for so doing, that the county was healthy enough without it; they considered it a useless expense to the county. I have tried to have them reestablish the office, but they ignore the law relative to it, and absolutely refuse to comply with it.

There has been no epidemic the past year, and but few births, deaths, or marriages. No undertakers' reports for the past year. There is too much work attached to the office for me to do it gratuitously, and would be illegal for me so to do after the Commissioners dispensed with the office, as the authority is vested in the Commissioners. If the law is compulsory, you have the facts in the case, and will know how to act. I remain, respectfully yours,

D. M. FREEMAN, M.D., *Late County Health Officer.*

GOODLAND, SHERMAN Co., January 14, 1890.

*Dr. J. W. Redden, Secretary State Board of Health*—DEAR DOCTOR: Inclosed you will find my annual report for the year 1889.

During the year there have been reported to me 3 cases of scarlet fever, and 5 of diphtheria, and no deaths resulting from either. There have been 30 cases of typhoid fever, with 2 deaths; a large number of cases of cholera infantum, with 3 deaths. The principal cause of the latter disease has been excessive heat and improper diet. Typhoid, and typhoid malarial fevers have prevailed to some extent in the county, but generally of a mild form.

The sanitary condition of the public buildings and the county in general is good. The County Commissioners render aid and assistance to the County Health Officer in enforcing all necessary rules and regulations for the carrying out of all sanitary measures; and the people in general are in favor of all the efforts of the County and State Boards of Health to prevent disease, and enforce sanitary measures.

Very truly yours,

M. A. RUSH, M.D., *County Health Officer.*

HUGOTON, STEVENS Co., January 6, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you my annual reports for 1889 of births, deaths, and marriages. There have been reported to me during the year 15 births, 5 deaths, and 18 marriages. Two cases of scarlet fever were reported, 3 of typhoid fever, and 5 of diphtheria; 1 death from typhoid fever, and none from either of the other diseases. There have been no epidemic diseases in this county during the past year.

The names of the physicians in this county are: C. L. Eonother, R. F. Furnas, S. C. Kline, and A. L. Holloway.

The general health of the county is remarkably good, and the sanitary conditions of the public buildings are excellent. The County Commissioners render all necessary aid and assistance in enforcing health laws and regulations; while the people in general indorse our labors, knowing that it is in the interest of the public health, and for the prevention of disease.

Very truly yours,

A. L. HOLLOWAY, *County Health Officer.*

COLBY, THOMAS CO., January 20, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual report as County Health Officer of Thomas county for the year 1889.

The number of deaths reported during the year is 43, the number of marriages 43, and the number of births 79. One case of scarlet fever has occurred in the county, which was fatal; 4 deaths have been reported from consumption of the lungs, and 4 from cholera infantum. Three of the four deaths from cholera infantum were cases in which no physician was called, and the report was copied by the County Health Officer from the burial-case permit. Several cases of whooping-cough have been reported in the eastern part of the county, and also a number cases of typhoid fever.

The general sanitary condition of the public buildings and the county is good. The County Commissioners render all necessary aid and assistance in carrying out the rules and orders for the prevention of disease and the protection of the people, while the people in general are in full sympathy and coöperation with the County and State Boards of Health in their efforts to prevent disease and enforce health regulations.

Very truly yours, V. C. EDDY, M.D., *County Health Officer.*

ALMA, WABAUNSEE CO., January 9, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR DOCTOR: I send you by mail to-day my annual report, compiled from birth and death returns made to me as County Health Officer of this county.

Returns of marriages are not made to the County Health Officer in this county, so I have no report to make on that score.

There are still some physicians in this county who do not make returns of births and deaths to me, and I wish to know of a way in which I could impress upon them the importance of doing so, and complying with the laws relating to the State Board of Health. I have written them several times, and have even threatened them with the law—and still they do not comply with my requests.

This county has been remarkably free from epidemics, and in fact from diseases of all kinds, during the past year; and I think the sanitary condition of our towns and country is very good. If physicians could only be prevailed upon to make returns of births and deaths to the County Health Officer, it would leave nothing to be desired. Can you inform me of any way in which I can bring this about?

Yours truly, E. W. ELDRIDGE, M.D., *County Health Officer.*

WASHINGTON, WASHINGTON CO., January 30, 1890.

*J. W. Redden, M.D., Secretary State Board of Health*—DEAR SIR: The injudicious decision of the County Commissioners of Washington county, setting aside the County Health Officer by refusing to pay his salary, a fact which soon became known to the physicians of the county, has resulted in a failure to make reports, and consequently a failure on my part. At the time of the action taken by the Board, I called their attention to the importance of the office to the people of the county, especially if an epidemic should prevail. A portion of the Board were friendly, but were in the minority. This occurred about the 1st of June, 1889. In two weeks from that time I notified the State Board of Health and Mr. Duston, chairman of the Board of County Commissioners, of the fact that a case of varioloid had been reported to me at Hollenberg, on the St. Jo. & Denver R. R. I immediately took steps to quarantine the case, and received special instructions from the State Board of Health. The chairman of the Board of Commissioners also in his letter instructed me to use every precaution necessary to prevent the disease from spreading. The case was placed under the charge of Dr. Hoxie. I was backed by public



sentiment and the efficient services of the Township Trustees, and the directions and advice of the State Board of Health, and did not stop short of convalescence and a complete fumigation of the premises at the close of the disease.

The Commissioners refused to pay me for my services as Health Officer; they paying me the bill, \$50, for my services rendered in small-pox case. Now public sentiment in this county favors the efficiency of the protection given, but the law is lame. It says, "they shall appoint," but does not fix the compensation, so that in these days of retrenchment of public expenses and spasmodic economy, the public health is liable to suffer. In the first place the Commissioners do not like to fix the salary of the Health Officer, which should be graded according to population, until this law is amended; next, the health officer or the physician should be held responsible, and the Commissioners cannot be.

Respectfully submitted.

CHAS. WILLIAMSON, M.D.

CORONADO, WICHITA CO., January 8, 1890.

*Dr. J. W. Redden, Secretary State Board of Health, Topeka, Kas.*—MY DEAR DOCTOR: I herewith hand you my reports for the year ending Dec. 31st, 1889. As you are aware, my appointment as Health Officer occurred late in the year, hence my reports will be comparatively incomplete.

It is with no small degree of satisfaction that I am able to report the sanitary condition of our county as being almost perfect. Our population is about twenty-five hundred, and our death-rate but eight. The birth statistics present pleasing proportions, as my record shows the number to be seventy-eight; while the marriages keep pace at the rate of forty-one; the casual observer cannot fail to notice that we are not in imminent danger of being depopulated.

Our county and public buildings are perfect, in an architectural as well as sanitary point of view; proper ventilation, it is pleasing to remark, has been insisted upon, especially in our county, school and church buildings.

The health of the county for the past year has been distressingly prevalent (to us doctors), and as our shadows grow apace, our bank accounts remind us that if the "camel and needle" story be true, then will the sweet ethereal essence of surrounding purified spirits surely hover o'er us in and through the misty *sometime*.

During the past year there has not been a single well-defined case of an infectious or contagious nature in the county, except "la grippe;" but as that is a distinctly foreign and fashionable malady, our people are pleased to have it heralded forth to the world that they too have "had it," but, like Rip Van Winkle, don't "count it."

It is with pleasure that I can report our County Commissioners—all county officers, and in fact all intelligent citizens of the county, as being heartily in accord with the rulings of the State Board of Health, and lend the Health Officer every assistance.

Give the State Board of Health more power regarding sanitary matters, and in consequence the county health officers will feel that their word is law, when ordering sanitive measures. There is one blot on the intelligence of at least two-thirds of the western and southwestern counties, and to which I wish to call your attention. It is this: Ninety per cent. of all animals that die (it matters not whether diseased) are left to rot on our prairies, to impregnate the otherwise pure and health-giving atmosphere with disease-producing effluvia. Those who thus befoul our pure atmosphere are not aware of the fact that by filth and foul air contagious diseases are produced. I am satisfied in my own mind that at least fifty per cent. of the so-called mountain fever cases are produced by this one cause. That such practices are common all over western Kansas, is only the plain fact. I have, with my limited and as some regard questionable authority, notified our County Attorney to prosecute all parties

who thus willfully disregard the health and comfort of their fellow-men. Just what the sequel will be to this order, I will not hazard an opinion. I have a plan, however, that I believe would prove successful in abating this nuisance. Let the State Board of Health (provided their power is sufficient) notify each county attorney to prosecute these cases vigorously, after first giving due notice through all county papers, that it is contrary to law as well as common decency to leave dead animals unburied.

I notice that some of the good doctors in the State are in favor of more stringent measures regarding the practice of medicine. While I am heartily in favor of giving the State Board of Health more power in regulating the sanitary affairs of the State, I am equally as positive in opposing any further legislation regarding the practice of medicine. In short, I am opposed to any law that savors of class legislation. I believe (to use a homely expression) that every tub should stand on its own bottom; that if the practice of medicine is a *science*, it certainly requires no legislative prop to support it; and if it is not a science, it cannot be legislated upon. I believe that every school of medicine, as well as every church, should rest its claims upon its worth, competency, morality, reason, and charity; that intelligence and justice need not appeal to class legislation and the sword of protection. Free and private judgment is the inherent right of all persons. I believe in more republicanism in our churches and professions—more mental freedom and fewer object-slaves. Our profession, which I love as I do my country, has found that death is as natural as life. The people need education, and not class legislation. In a republic of intellectual liberty, we should depend upon reason, persuasion, and be free and honorable enough to *allow all* the liberty of choosing their own physicians as well as their pastors and political teachers. I will join hands with all who want better education, better colleges, better students, and better practitioners. I would elevate our profession so high by education and skill that charlatans could never compete with us. No well-posted and honorable practitioner in the regular school will deny for a moment that our school has made many, yes, very many blunders. Only think of the masters of our profession, for the last two hundred years teaching us to give calomel to increase the flow of bile, while the truth, as stated by our best physicians to-day, is that it has the direct opposite effect! The good old regular school, as well as all others, has many excrescences that need the vigorous uses of the scalpel; nor will one of us deny that there is not some good in all schools of medicine, and I affirm that all honorable practitioners should be willing to stand or fall on their individual merits, an intelligent community being the judge.

Yours very truly,

A. R. KNAPP, M. D., *County Health Officer.*

FREDONIA, WILSON Co., January 28, 1890.

*J. W. Redden, M. D., Secretary State Board of Health*—DEAR DOCTOR: I inclose herewith my annual report for 1889. There have been reported to me, during the year, 162 births, 53 deaths and 143 marriages. All the physicians of this county have registered. There have been reported to me, 4 deaths from consumption and 2 from cholera infantum. There have been no instances of the spread of contagious diseases through the schools, or by means of funerals, or by infected clothing or through carelessness.

The general sanitary condition of the public buildings and the county is very good. The health during the past year has been remarkable, and has been one of exceptional immunity from epidemics and endemics. The supply of water, ice, meat, milk and vegetables is remarkably pure and healthful.

We have no swamps, marshes or ponds to any extent in the county, and the natural drainage is good.

The County Commissioners are willing and ready to render any necessary aid in

carrying out the rules and regulations of the County and State Boards of Health; while the people in general are in hearty sympathy with our efforts to promote sanitary measures, to prevent disease, and to protect the people.

Very truly yours, F. M. WILEY, M.D., *County Health Officer*.

YATES CENTER, WOODSON CO., February 1, 1890.

J. W. Redden, M.D., *Secretary State Board of Health*—DEAR DOCTOR: I herewith send you my report for 1889, and with it a brief history of the small-pox epidemic at Piqua in July last.

There have been reported to me during the year 70 deaths, all white; 69 births, and 74 marriages; there were reported to me during the year 6 deaths from scarlet fever, 1 from diphtheria, 4 from typhoid fever, 9 from consumption of the lungs, and 14 from cholera infantum. The last disease has been less prevalent than in former years. There has been no spread of contagious diseases through the schools, or by means of funerals, or by means of infected clothing or other articles, except in the cases of small-pox in Piqua last July, referred to in my special report.

The general sanitary condition of the public buildings and the county is good. The County Commissioners are anxious to do what they can to enforce all the sanitary measures of the County and State Boards of Health, and the people in general render a hearty coöperation and assistance in carrying out all measures that have for their object the prevention of disease, promotion of health, and the protection of the people. Very truly yours,

E. K. KELLENBERGER, M.D., *County Health Officer*.

## REGISTRATION OF PHYSICIANS AND MIDWIVES.

The following is a tabulated list of the registration of the physicians and midwives who registered during the year 1889, showing the total registration, and the number representing each school of medicine in each county:

<i>Counties.</i>	<i>Number reg- istered.....</i>	<i>Regular.....</i>	<i>Ecclectic.....</i>	<i>Homeopathic.....</i>	<i>Others.....</i>	<i>Midwives.....</i>
Chase.....	3	1	1	1		
Clay.....	1			1		
Crawford.....	15	13	2			
Decatur.....	3	3				
Ellis.....	2	2				
Ford.....	10	10				
Garfield.....	2	1	1			
Johnson.....	7	5		1	1	
Kearny.....	2	1	1			
Kingman.....	3	2	1			
Labette.....	5	3	1			1
Leavenworth.....	24	20		4		
Linn.....	2		1			
Marion.....	2			2		
Marshall.....	1	1				
McPherson.....	1	1				
Miami.....	1	1				
Meade.....	5	5				
Montgomery.....	5	1	2	1		1
Nemaha.....	6	6				
Ness.....	7	3	2	2		
Norton.....	4		2		1	1
Osage.....	13	2	2		9	
Osborne.....	2	1				1
Phillips.....	2	2				
Pottawatomie.....	6	2		2	1	1
Rawlins.....	2		1			1
Scott.....	4	2		2		
Shawnee.....	22	6	5	1	9	1
Sherman.....	1			1		
Thomas.....	2		1	1		
Wabaunsee.....	6	4	1	1		
Totals.....	172	101	21	21	21	7
Totals registered during the year 1888.....	288	162	40	26	32	28
Totals registered during the year 1887.....	2,439	1,524	382	197	201	135
Totals registered to date.....	2,899	1,787	443	244	254	170

On the following pages is a complete list of the physicians and accoucheurs, as registered during the past year in various counties in the State. The names of the counties, as well as of the physicians and midwives, are given in regular alphabetical order. The date of registration, school of practice, post-office address, the age, nativity, number of years in practice, number of years in practice in Kansas, the date when the diploma was conferred, name of college, and place of graduation, are given.

We invite your careful attention to said registration.



## SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

<i>Name.</i>	<i>When registered.</i>	<i>School of practice.</i>	<i>Residence and P. O. address.</i>	<i>County.</i>	<i>Age</i>
Morgan, J. F.....	January 6, 1890.....	Regular.....	Cottonw'd Falls..	Chase.....	33
Smith, C. M. ....	January 22, 1890....	Eclectic.....	Strong City.....	" .....	36
Welth, Andrew.....	April 15, 1889.....	Homeopathist...	Matfield Green...	" .....	60
Blanke, T. F.....	1889.....	Homeopathist...	Morgansville.....	Clay .....	27
Bergen, S. R.....	February 7, 1889....	Regular .....	Girard .....	Crawford.....	63
Bissell, I. J.....	April 16, 1889.....	" .....	" .....	" .....	69
Boas, M. L.....	July 13, 1889.....	" .....	Pittsburg.....	" .....	37
Chesebrough, Samuel.....	July 25, 1889.....	" .....	" .....	" .....	29
Cisna, G. W.....	April 15, 1889.....	" .....	" .....	" .....	47
Dagley, Elias L.....	May 24, 1889.....	" .....	Girard .....	" .....	43
Forney, L. J.....	June 1, 1889.....	" .....	Girard .....	" .....	47
Finch, S. P.....	July 30, 1889.....	" .....	Girard .....	" .....	53
Hobbs, T. J.....	April 21, 1889.....	" .....	Aradia.....	" .....	57
Hunter, Charles.....	July 27, 1889.....	Eclectic.....	Pittsburg.....	" .....	36
Johnson, Jno. O.....	April 2, 1889.....	" .....	Girard .....	" .....	30
Marr, R. B.....	January 21, 1889....	Regular .....	Midway .....	" .....	40
Mahr, John.....	December 13, 1889..	" .....	McCune .....	" .....	22
Pinod, P. H. A.....	November 30, 1889..	" .....	Walnut .....	" .....	38
Welch, W. E.....	August 24, 1889....	" .....	Pittsburg.....	" .....	28
Farrow, W. H.....	August 3, 1889.....	Allopath.....	Allison .....	Decatur.....	45
Stapp, M. Robertson.....	May 27, 1889.....	" .....	Jennings.....	" .....	26
Welles, F. H.....	October 1, 1889....	" .....	Oberlin .....	" .....	48
Gibson, Lewis M.....	January 3, 1889.....	Regular.....	Hays City.....	Ellis .....	24
Messick, Chas.....	November 9, 1889...	" .....	Ellis .....	" .....	24
Chouteau, A. S.....	February 6, 1890....	Regular.....	Dodge City.....	Ford .....	38
Crumbine, S. J.....	February 6, 1890....	" .....	" .....	" .....	27
Crouch, W. S.....	February 5, 1890....	" .....	Ford .....	" .....	39
Fredendall, G. W.....	February 5, 1890....	" .....	Bucklin.....	" .....	27
Hollopeber, D. J.....	February 6, 1890....	" .....	Ford .....	" .....	47
McArty, T. L.....	February 6, 1890....	" .....	Dodge City.....	" .....	40
Milbin, C. A.....	February 6, 1890....	" .....	" .....	" .....	37
Rose, D. D.....	February 6, 1890....	" .....	" .....	" .....	46
Stroup, M. D.....	February 6, 1890....	" .....	Bloom .....	" .....	36
Wade, John W.....	February 6, 1890....	" .....	Dodge City.....	" .....	49
Cross, Augusta.....	September 5, 1889...	Allopathic .....	Ravanna .....	Garfield.....	55
Mandigo, D. H.....	September 5, 1889...	Eclectic.....	" .....	" .....	43
White, F. M.....	January 11, 1890....	Eclectic.....	Kendall.....	Hamilton.....	36
Ellis, C. H.....	June 26, 1889.....	Homeopathist...	Olathe .....	Johnson .....	28
Haury, Samuel S.....	April 15, 1889.....	Regular.....	South Park.....	" .....	41
McDonald, Clara.....	December 21, 1889..	" .....	Olathe .....	" .....	26
Thomas, Jessie.....	November 5, 1889...	" .....	" .....	" .....	26
<i>Not registered:</i>					
Atchison, Renwick.....		Regular.....	Edgerton.....	" .....	
Kestler, R.....		" .....	Wilder .....	" .....	
Moore, Wm.....		Regular.....	Olathe .....	" .....	
Lovin, C. C.....	January 12, 1890....	Regular.....	Lakin .....	Kearny .....	36
Dulin, Wm.....	November 1, 1889...	Regular.....	Kingman .....	Kingman .....	48
Hemstid, J. W.....	October 15, 1889...	Eclectic.....	" .....	" .....	29
Jeffers, G. D.....	June 19, 1889.....	Regular.....	Cunningham.....	" .....	24
Brock, L.....	June 13, 1889.....	Midwife.....	Stover.....	Labette.....	37
Davis, H. R.....	June 19, 1889.....	Eclectic.....	Altamont.....	" .....	60
Fuller, Henry E.....	January 5, 1889....	Regular.....	Oswego.....	" .....	42
Johnson, S. W.....	December 14, 1889..	" .....	Valeda.....	" .....	32
Newton, J.....	June 19, 1889.....	" .....	Oswego.....	" .....	23
Bidwell, W. D.....	July 10, 1888.....	Regular.....	Leavenworth.....	Leavenworth...	28
Brock, J. W.....	July 6, 1888.....	" .....	" .....	" .....	58
Carpenter, C. R.....	July 6, 1888.....	" .....	" .....	" .....	31
Few, S. F.....	July 6, 1888.....	" .....	" .....	" .....	66
Goddard, C. C.....	July 6, 1888.....	" .....	" .....	" .....	39
Hamilton, J. L.....	July 7, 1888.....	" .....	" .....	" .....	33
Holzer, Anthony.....	July 16, 1888.....	" .....	" .....	" .....	42

## ACCOUCHEURS, BY COUNTIES, IN THE STATE OF KANSAS.

Nativity.	Years in practice...	Years practice in Kansas...	When diploma was conferred.	Changes.	Name of college, and place of graduation.
American ..	7	1	Feb. 24, 1881.....		College of Physicians and Surg., Keokuk, Iowa.
Swiss.....	5	5	June 2, 1885.....		Cincinnati Medical Institute, Cincinnati, O.
	25	10	May 24, 1879.....		American Medical Institute, St. Louis, Mo.
Illinois.....			March, 1889.....		Homeopath Medical College of Mo., St. Louis.
American...	38	5	Feb. 17, 1853.....		Iowa State Medical College, Keokuk, Iowa.
" ..	43	6	March, 1847.....		Medical Department Willoughby University, Willoughby, Lake county, Ohio.
" ..	10		March 1, 1881.....		Central Col. Physicians and Surg., Indianapolis.
" ..	17		March 21, 1889.....		Albany Medical College, Albany, N. Y.
" ..	17		June 13, 1872.....		Rush Medical College, Chicago, Ill.
" ..	23		March, 1877.....		University Louisville, Ky.
" ..	17		March, 1873.....		Medical College of Ohio, Cincinnati.
" ..	31		1872.....		Med. Dept. University of Vermont, Burlington.
" ..	2		March, 1867.....		University, Nashville, Tenn.
" ..	2		April 26, 1888.....		Certificate State Med. and Surg. Board of Kansas.
" ..	2		June 7, 1887.....		Eclectic Medical Institute, Cincinnati, O.
" ..	14	13	1875.....		St. Louis Medical College, St. Louis, Mo.
" ..	4		March 11, 1889.....		Kansas City Medical College, Kansas City, Mo.
" ..	12		March 14, 1877.....		Physicians and Surgeons, St. Louis, Mo.
" ..	1	1	Feb. 16, 1886.....		Rush Medical College, Chicago, Ill.
American...	20				Miami Medical College, Cincinnati, O.
" ..	1		April 4, 1889.....		Jefferson Medical College, Philadelphia, Pa.
" ..	6		June 4, 1883.....		Col. of Medicine and Surgery, Union City, N. Y.
American...		6m	June 13, 1889.....		Physicians and Surgeons, New York.
" ..	1	9m	June, 1888.....		Kentucky School of Medicine.
American...	10	10	Feb., 1879.....	St. Louis, Mo.	St. Louis Medical College, St. Louis.
" ..	6	5½	Feb., 1883.....	H'pk'nv. Ky.	Cincinnati Medical College, Cincinnati, O.
" ..	9	5	June 21, 1881.....	Kentucky.....	Kentucky Medical College, Louisville, Ky.
" ..	4	4	Feb., 1886.....	Wash., Kas.	Chicago Medical College, Chicago, Ill.
" ..	22	10	Feb., 1876.....	Iowa.....	Rush Medical College, Chicago, Ill.
" ..	18	17	March, 1870.....	St. Louis, Mo.	Jefferson Medical College, Philadelphia, Pa.
" ..	10	8	Feb., 1881.....	Clinton, Mo.	Rush Medical College, Chicago, Ill.
" ..	14	4	Feb., 1880.....	Chicago, Ill.	Medical Dept. University of Louisville, Ky.
" ..	15	6	1880.....	Pen'sylv'nia,	University of Philadelphia, Pa.
" ..	15	8	Feb., 1880.....	St. Jos., Mo...	St. Joseph Hospital Med Col., St. Joseph, Mo.
New York...	25	1			Ann Arbor Medical College, Ann Arbor, Mich.
" ..	12	1			
American...	13	2	1877.....		American Medical, St. Louis.
American...	3	3	1887.....		Homeopathic Medical College, Cleveland, O.
German...			1889.....		St. Louis Medical College, St. Louis, Mo.
American...	4	4	1884.....		Pennet's Medical College, Chicago, Ill.
" ..	3	3	1886.....		Woman's Medical College, Chicago, Ill.
.....					=====
American...	6	4	June, 1884.....		University of Michigan, Ann Arbor.
American...	24	4	March 1, 1873.....		Medical College of Ohio, Cincinnati.
" ..		5	March 3, 1886.....		American Medical College, St. Louis.
" ..			March 1, 1889.....		University of Louisville, Ky.
New York...	16				Studied under Dr. McGregor, Dickinson, Mo.
West Va.....	30	2			Practice under physician.
Mass.....	4		March, 1884.....		Belleville Medical College of Massachusetts.
West Va.....	8	1	Feb., 1880.....		Attended Vanderbilt Medical College at Nashville, Tenn., and University of Tennessee.
Illinois.....			Feb., 1889.....		College Physicians and Surgeons, Keokuk, Iowa.
Mass.....	3	3	June 24, 1885.....		Harvard Medical College, Boston, Mass.
Ohio.....	32	23	March 1, 1855.....		Maryland University, Baltimore Md.
Iowa.....		6	Feb. 22 1882.....		Rush Medical College, Chicago, Ill.
Virginia.....	44	25	March 1, 1844.....		Jefferson Medical College, Philadelphia, Pa.
New York...	15	9	March 1, 1874.....		Bellevue Hospital Medical College, New York.
Ohio.....	8	5	March 5, 1887.....		Columbus Medical College, Columbus, Ohio.
Austria.....	10	2½	March, 1878.....	Strassburg...	University of Strassburg, Strassburg, Germany.

## SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

<i>Name.</i>	<i>When registered.</i>	<i>School of practice.</i>	<i>Residence and P. O. address.</i>	<i>County.</i>	<i>Age</i>
Hunter, L. K.....	July 2, 1888.....	Homeopathic.....	Leavenworth.....	Leavenworth..	42
Jonsson, A. L.....	July 16, 1888.....	".....	".....	".....	43
Jones, S. W.....	July 16, 1888.....	Regular.....	".....	".....	59
Lane, James A.....	July 6, 1888.....	".....	".....	".....	35
Langworthy, S. B.....	July 7, 1888.....	".....	".....	".....	30
Laurer, A.....	July 7, 1888.....	".....	".....	".....	39
McCormick, J. M.....	July 16, 1888.....	".....	".....	".....	57
McGill, J. F.....	July 16, 1888.....	".....	Soldiers' Home...	".....	21
Morgan, Eliza K.....	July 16, 1888.....	Homeopathic.....	Leavenworth.....	".....	52
Morgan, W. F.....	July 16, 1888.....	".....	".....	".....	51
Phillips, Samuel.....	July 6, 1888.....	Regular.....	".....	".....	58
Thomas, D. W.....	July 6, 1888.....	".....	".....	".....	62
Thomas, M. S.....	July 6, 1888.....	".....	".....	".....	57
Van Dayn, A. C.....	July 6, 1888.....	".....	".....	".....	54
Van Eman, W. J.....	July 6, 1888.....	".....	".....	".....	39
Walter, W. W.....	July 6, 1888.....	".....	".....	".....	28
Wever, J. L.....	July 6, 1888.....	".....	".....	".....	63
Hamilton, W. H.....	May 21, 1889.....	Homeopathic.....	Centerville.....	Linn.....	55
Raley, John N.....	June 10, 1889.....	Eclectic.....	".....	".....	58
Fitzen, Sarah.....	June 28, 1889.....	Homeopathic.....	Hillsboro.....	Marion.....	49
Eoth, Florentine.....	June 19, 1889.....	".....	".....	".....	47
Irvine, Thomas.....	July 10, 1889.....	Allopathic.....	Marysville.....	Marshall.....	49
Engborg, Andrew.....	January 18, 1890...	Regular.....	McPherson.....	McPherson.....	26
Armstrong, T. M.....	October 7, 1889.....	Regular.....	Fowler.....	Meade.....	38
Button, C.....	September 8, 1886...	".....	Meade.....	".....	30
Dewees, W. L.....	August 13, 1886.....	".....	Fowler.....	".....	27
Riney, J. M.....	March 9, 1889.....	".....	Meade.....	".....	49
Smith, I. E.....	November 3, 1887...	".....	West Plains.....	".....	29
Smith, B. R.....	March, 1889.....	Regular.....	Block.....	Miami.....	43
Faatz, F. H.....	May, 1889.....	Homeopathic.....	Caney.....	Montgomery...	48
Niles, E. R.....	October 28, 1889.....	Eclectic.....	Cestillo.....	".....	48
Pennington, Nancy.....	July, 1889.....	Midwife.....	Independence...	".....	34
Warren, H. N.....	February 10, 1889...	Regular.....	".....	".....	44
Whittier, C. H.....	March 10, 1889.....	Eclectic.....	Cherryvale.....	".....	55
Carlton, E. L.....	May 16, 1889.....	Regular.....	Oneida.....	Nemaha.....	50
Mefford, Walter T.....	April 16, 1889.....	".....	Seneca.....	".....	45
Waggener, J. A.....	June 21, 1889.....	".....	Bern.....	".....	37
Welsh, H. G.....	May 16, 1889.....	".....	".....	".....	33
White, A.....	May 21, 1889.....	".....	Seneca.....	".....	64
Wileman, Thomas H.....	January 1, 1889.....	".....	".....	".....	59
Coleman, W. L.....	July 10, 1889.....	Allopathic.....	Pawnee.....	Ness.....	54
Greene, M.....	January 25, 1889.....	Homeopathic.....	Brownell.....	".....	40
Hawkins, T.....	January 31, 1889.....	".....	Ness City.....	".....	44
Johnston, W. M.....	February 5, 1889.....	Regular.....	Bazine.....	".....	27
Meyers, E. L.....	January 28, 1889.....	Eclectic.....	Ransom.....	".....	43
Rankin, J. M.....	April 26, 1889.....	".....	Harold.....	".....	49
Taylor, H.....	March 27, 1889.....	Regular.....	Utica.....	".....	42
Brooks, H. A.....	March 18, 1889.....	Eclectic.....	Almena.....	Norton.....	48
Taylor, J. C.....	July 19, 1889.....	Botanic.....	Clyde.....	Cloud.....	66
Wilson, S. S.....	May 11, 1889.....	Eclectic.....	Norton.....	Norton.....	25
Wright, Mrs. Albin J.....	December 4, 1889.....	".....	Almena.....	".....	41
Chapman, Sylvanus L.....	December 13, 1889...	Eclectic.....	Peterton.....	Osage.....	55
Pickard, W. S.....	December 13, 1889...	Regular.....	Burlingame.....	".....	30
Seabrook, Clarence C.....	July 1, 1889.....	".....	".....	".....	34
Wellman, J. W.....	December 10, 1889...	Eclectic.....	Melvorn.....	".....	63
<i>Not registered:</i>					
Bodley, —.....	.....	.....	Quenemo.....	".....	.....
Ennis, J. M.....	.....	.....	Scranton.....	".....	.....
Manley, —.....	.....	.....	Quenemo.....	".....	.....
McDonnell, —.....	.....	.....	".....	".....	.....
Servison, —.....	.....	.....	".....	".....	.....
Swallow, H. H.....	.....	.....	Carbondale.....	".....	.....
Wellman, Frank.....	.....	.....	Melvorn.....	".....	.....
Wellman, Webb.....	.....	.....	".....	".....	.....

[illegible]



## SUPPLEMENTAL REGISTRATION OF PHYSICIANS AND

<i>Name.</i>	<i>When registered.</i>	<i>School of practice.</i>	<i>Residence and P. O. address.</i>	<i>County.</i>	<i>Age</i>
Wheeler, —			Quenemo.....	Osage.....	
Bohning, A. H. P.....	April 11, 1889.....	Regular.....	Downs.....	Osborne.....	32
Briery, Mrs. J. G.....	February 11, 1889...	Midwife.....	Town Creek.....	".....	58
Fessenden, Edwin A.....	August 4, 1889.....	Regular.....	Logan.....	Phillips.....	40
<i>Not registered:</i>					
Harris, A. J.....		".....	Kirwin.....	".....	
Coggsball, G. A.....	March 5, 1889.....	Regular.....	Blaine.....	Pottawatomie..	46
Folger, W. C.....	March 25, 1889.....	".....	".....	".....	21
Hill, D. G.....	February 27, 1889...	Homeopathic.....	Wamego.....	".....	29
McMahan, A. A.....	July 2, 1889.....	".....	Westmoreland ..	".....	35
<i>Not registered:</i>					
Alberts, Dr.....			Olesburg.....	".....	
Faberberg, Mrs.....		Midwife.....	".....	".....	
Brown, Nancy.....	July 6, 1889.....	Midwife.....	Ludell.....	Rawlins.....	38
Whiting, W. E.....	August 9, 1889.....	Eclectic.....	Herndon.....	".....	28
Bond, J. F.....	January 23, 1889...	Allopathic.....	Scott City.....	Scott.....	28
<i>Not registered:</i>					
Arbuthnot, R. T.....		".....	".....	".....	30
Miller, —		Homeopathic.....	".....	".....	40
Williams, J. U.....		".....	Grigsby.....	".....	35
Alkire, H. L.....	April 9, 1889.....	Regular.....	Topeka.....	Shawnee.....	27
Coffman, Mrs. Sarah E...	August 7, 1889.....	Eclectic.....	".....	".....	53
Halderman, Mrs. Betty...	December 17, 1889...	Midwife.....	Richland.....	".....	40
Hamilton, A. L.....	March 11, 1889.....	Regular.....	Auburn.....	".....	25
Hanson, F.....	January 4, 1889.....	Allopathic.....	Topeka.....	".....	24
Hume, W. A.....	May 25, 1889.....	".....	".....	".....	25
Long, D. Thos.....	September 30, 1889,	Eclectic.....	Topeka.....	".....	43
Martin, C. William.....	November 16, 1889...	Regular.....	".....	".....	30
McFarland, T.....	October 7, 1889.....	".....	".....	".....	37
Porter, Horace.....	October 14, 1889...	".....	".....	".....	50
Smith, C.....	March 25, 1889.....	Eclectic.....	".....	".....	41
Stewart, Mary E.....	January 12, 1889...	Homeopathic.....	".....	".....	
Tobias, J. M.....	May 27, 1889.....	Eclectic.....	".....	".....	48
West, J. M.....	August 15, 1889.....	Independent.....	".....	".....	46
Westerfield, J. M.....	February 6, 1889...	Eclectic.....	".....	".....	
<i>Not registered:</i>					
Green, C. C.....			".....	".....	
Guibor, C. H.....			".....	".....	
Iserman, Dr.....			".....	".....	
Lanning, Chas.....			".....	".....	
McLaughlan, T.....			".....	".....	
Mutz, C.....			".....	".....	
Rodgers, D. F.....			".....	".....	
Brant, H. W.....	May 4, 1889.....	Homeopathic.....	Goodland.....	Sherman.....	32
Kiggins, J. T.....	August 3, 1889.....	Homeopathic.....	Rexford.....	Thomas.....	42
Wallace, W. W.....	March 29, 1889.....	Eclectic.....	Brewster.....	".....	30
Ashworth, James.....	August 12, 1889.....	Eclectic.....	Pavilion.....	Wabaunsee.....	
Culp, F. M.....	July 6, 1889.....	Regular.....	Paxico.....	".....	36
Goodsell, S.....	April 20, 1888.....	Homeopathic.....	Welcome.....	".....	
Van Frankenstein.....	July 12, 1889.....	Allopathic.....	McFarland.....	".....	
<i>Not registered:</i>					
Barber, W. D.....		Regular.....	Maple Hill.....	".....	
Schmidt, H. R.....		".....	Alma.....	".....	

## ACCOUCHEURS IN THE STATE OF KANSAS—CONCLUDED.

<i>Nativity.</i>	<i>Years in practice.....</i>	<i>Years practice in Kansas.....</i>	<i>When diploma was conferred.</i>	<i>Name of college, and place of graduation.</i>
German.....	5	3	June 4, 1884.....	Goettingen, Hanover, Germany.
American.....				
Wisconsin.....	2		March 12, 1889.....	Bellevue Hospital Medical College, New York.
.....	26	1	1859.....	Jefferson Medical College, Philadelphia, Pa.
Rhode Island.....	11	6	March, 1879.....	Bellevue Hospital Medical College, New York.
North Carolina.....	2	5 mos.	February 21, 1889.....	Hahnemann Medical College, Chicago.
Rhode Island.....				Hahnemann Medical College, Chicago.
Ohio.....	5	3		
Russia.....				
Sweden.....				
American.....	12	4		
“.....			March 15, 1889.....	Iowa Eclectic Medical College.
American.....	5	4	February 17, 1885.....	Rush Medical College, Chicago, Ill.
“.....				Keokuk, Iowa (is not practicing).
German.....				
American.....				Missouri Medical College, St. Louis.
American.....	2	2	April, 1887.....	Jefferson Medical College, Philadelphia, Pa.
“.....	12	12	1871.....	Washington Medical College, New York City.
“.....	10	10		
“.....	1	1	February 19, 1889.....	Rush Medical College, Chicago, Ill.
“.....	3 mos.		February 21, 1888.....	Rush Medical College, Chicago, Ill.
“.....	17	4	June 1, 1881.....	School of Physicians and Surgeons, St. Louis, Mo.
“.....	7	7	March, 1882.....	Eclectic Medical College, Cincinnati, Ohio.
“.....	17	9	May, 1872.....	New York Medical College, New York City.
“.....	28	3	January 10, 1861.....	Albany Medical College, Albany, N. Y.
“.....	18			Yale Medical Department, New Haven, Conn.
“.....				Bennett Medical College, Chicago, Ill.
“.....			1866.....	Hahnemann Medical College, Chicago, Ill.
“.....	23		May, 1872.....	Eclectic Medical Institute, Cincinnati, Ohio.
“.....	15	10	June 5, 1889.....	American Medical College, St. Louis, Mo.
Indiana.....		6	February 1, 1885.....	Indiana Eclectic Medical College, Indianapolis.
.....				
.....				
.....				
.....				
.....				
American.....	4		March 16, 1888.....	Hahnemann Medical College, Chicago, Ill.
Ohio.....	17	5	Undergraduate.....	
Indiana.....	8	8	June 18, 1881.....	Eclectic Medical Institute, Cincinnati, Ohio.
England.....	15		April 30, 1883.....	American Medical College, Cincinnati, Ohio.
Ohio.....				University of Michigan, Ann Arbor.
Germany.....				
.....				
.....				

## VITAL STATISTICS.

The following is a list of counties, and number of births in each, that were reported to the Secretary of the State Board of Health, by the county health officers and physicians, for the years 1888 and 1889:

<i>Counties.</i>	<i>1888.</i>	<i>1889.</i>
Anderson.....	24	185
Atchison.....	26	16
Bourbon.....		144
Butler.....		134
Chase.....	113	54
Cheyenne.....		6
Clay.....	85	77
Cloud.....	54	8
Coffey.....	16	
Comanche.....	53	
Crawford.....	598	350
Decatur.....	167	106
Dickinson.....		6
Doniphan.....	45	27
Elk.....	70	
Ellis.....	25	22
Ellsworth.....	113	101
Finney.....	103	46
Ford.....	149	105
Franklin.....	83	61
Garfield.....	29	31
Geary.....	128	132
Gove.....		1
Graham.....	44	45
Gray.....	12	1
Greenwood.....	94	
Harvey.....	148	
Hodgeman.....	35	38
Jackson.....	28	18
Jefferson.....	56	38
Jewell.....	92	88
Johnson.....	245	208
Kearny.....		18
Kingman.....	265	149
Labette.....	170	138
Lane.....	54	28
Leavenworth.....	73	20
Lincoln.....	156	136
Linn.....	244	89
Lyon.....	194	39
Marion.....	183	242
Marshall.....	307	345
McPherson.....	106	170
Miami.....	134	118
Meade.....		24
Montgomery.....	238	168
Nemaha.....	298	139
Neosho.....	29	11
Ness.....		88
Norton.....		55
Osage.....	275	178
Osborne.....	211	176
Pawnee.....	44	
Phillips.....	97	103
Pottawatomie.....	194	210
Pratt.....	120	95
Rawlins.....	76	18
Republic.....	3	
Rooks.....		48
Rush.....	26	
Russell.....	63	40
Saline.....	169	
Scott.....		30
Sedgwick.....	181	428

## VITAL STATISTICS, (BIRTHS).—CONCLUDED.

<i>Counties.</i>	1888.	1889.
Shawnee.....	442	372
Sheridan.....	18	8
Sherman.....	56	88
Stanton.....	11	15
Stevens.....	150	79
Thomas.....	188	108
Wabaunsee.....	48	76
Washington.....	67	162
Wichita.....	226	69
Wilson.....	169	2
Woodson.....		
Wyandotte.....		
Totals.....	7,978	6,325

The following is a list of counties, and number of deaths in each, that were reported to the Secretary of the State Board of Health by the county health officers, physicians, and undertakers, for the years 1888 and 1889:

<i>Counties.</i>	1888.	1889.
Anderson.....	10	40
Atchison.....	470	282
Bourbon.....		145
Butler.....		31
Chase.....	20	9
Cheyenne.....		13
Clay.....	207	147
Cloud.....	10	
Coffey.....	16	
Comanche.....	10	
Crawford.....	321	196
Decatur.....	27	11
Doniphan.....	32	18
Elk.....	37	
Ellis.....	11	9
Ellsworth.....	89	74
Finney.....	32	22
Ford.....	84	59
Franklin.....	33	33
Garfield.....	4	5
Geary.....	109	122
Gove.....		1
Graham.....	51	12
Gray.....	4	3
Greenwood.....	129	
Greeley.....		19
Harvey.....	40	
Hodgeman.....	17	16
Jackson.....	5	2
Jefferson.....	24	2
Jewell.....	132	89
Johnson.....	124	68
Kearny.....		6
Kingman.....	62	39
Kiowa.....	1	
Labette.....	170	80
Lane.....	6	18
Leavenworth.....	37	17
Lincoln.....	77	22
Linn.....	84	52
Lyon.....	71	6
Marion.....	39	84
Marshall.....	180	90
McPherson.....	101	176
Miami.....	114	161
Meade.....		8
Montgomery.....	73	40
Nemaha.....	60	51
Neosho.....	16	2
Ness.....		49
Norton.....	24	23



## VITAL STATISTICS, (DEATHS),—CONCLUDED.

<i>Counties.</i>	1888.	1889.
Osage.....	72	60
Osborne.....	79	96
Pawnee.....	23	.....
Phillips.....	108	87
Pottawatomie.....	103	45
Pratt.....	26	.....
Rawlins.....	27	20
Russell.....	36	.....
Saline.....	39	.....
Scott.....	.....	13
Sedgwick.....	49	48
Shawnee.....	180	125
Sheridan.....	30	.....
Sherman.....	24	28
Stanton.....	.....	1
Stevens.....	.....	5
Thomas.....	73	43
Wabaunsee.....	111	105
Washington.....	31	.....
Wichita.....	25	9
Wilson.....	93	53
Woodson.....	102	70
Totals.....	4,394	3,165

The following is a list of counties, and number of marriages in each, that were reported to the Secretary of the State Board of Health by the county health officers, for the years 1888 and 1889:

<i>Counties.</i>	1888.	1889.
Anderson.....	.....	115
Butler.....	.....	29
Chase.....	13	2
Cheyenne.....	.....	24
Clay.....	119	141
Cloud.....	34	6
Coffey.....	150	119
Comanche.....	40	.....
Crawford.....	.....	280
Decatur.....	82	55
Elk.....	95	.....
Ellis.....	67	24
Ellsworth.....	85	51
Finney.....	61	22
Ford.....	66	57
Garfield.....	22	11
Geary.....	72	84
Greenwood.....	46	.....
Greeley.....	.....	10
Harvey.....	152	.....
Hodgeman.....	30	.....
Jewell.....	109	105
Johnson.....	141	162
Kearny.....	.....	8
Kingman.....	98	88
Labette.....	180	181
Lane.....	.....	16
Lincoln.....	44	.....
Linn.....	141	154
Marion.....	73	131
Marshall.....	56	172
McPherson.....	118	167
Miami.....	173	179
Meade.....	.....	23
Montgomery.....	217	235
Nemaha.....	13	127
Ness.....	.....	37
Norton.....	23	130
Osage.....	.....	4
Osborne.....	88	90
Phillips.....	118	113

## VITAL STATISTICS, (MARRIAGES,)—CONCLUDED.

<i>Counties.</i>	1888.	1889.
Pottawatomie.....	121	104
Pratt.....	55	.....
Rawlins.....	41	16
Saline.....	150	.....
Scott.....	.....	28
Sedgwick.....	521	452
Sheridan.....	26	.....
Sherman.....	44	56
Stevens.....	.....	18
Thomas.....	49	43
Wichita.....	35	41
Wilson.....	133	143
Woodson.....	99	74
Totals.....	4,000	4,129

Below and on subsequent pages will be found synopses of the annual reports of births, deaths and marriages as returned by the County Health Officers and physicians in the several counties of the State, for the year 1889, and reported to this office; a careful examination of which will be of special interest.

## BIRTHS.

IN ANDERSON county, the total number of births returned is 185. Of these, 98 were males, and 87 females; 180 were white, and 5 colored; 40 fathers between 21 and 25 years of age, 31 between 26 and 30, 30 between 31 and 35, 40 between 36 and 40, and 44 between 41 and 45. There were 5 still-births, 2 illegitimate children, 2 twins, and 1 triplet.

IN ATCHISON county, the total number of births returned is 16. Of these, 7 were males, and 9 females; 15 were white, and 1 colored; 4 were the first child of mothers, 3 the second, 4 the third, 2 the fourth, 1 the seventh, 1 the eighth, and 1 the ninth; 12 were born in cities of over 5,000 population, and 4 in towns of less than 500 population, and in the country; there was 1 still-birth; 4 fathers were between 26 and 30 years of age, 4 between 31 and 35, 4 between 36 and 40, 2 between 41 and 45, 1 between 46 and 50, and 1 between 51 and 55; 3 mothers were between 21 and 25 years of age, 8 between 26 and 30, 2 between 31 and 35, and 3 between 41 and 45; 13 fathers and 14 mothers were of American nationality, 1 father and 1 mother of African, 1 father and 1 mother of German, and 1 father of Italian.

IN BOURBON county, the total number of births returned is 144. Of these, 66 were males, and 77 females; 143 were white, and 1 colored; 35 were the first child of mothers, 27 the second, 32 the third, 16 the fourth, 11 the fifth, 9 the sixth, 3 the seventh, 3 the eighth, 6 the ninth, 1 the tenth and 1 the eleventh; 15 mothers were between 16 and 20 years of age, 2 fathers under 20, 30 fathers and 29 mothers between 21 and 25, 35 fathers and 45 mothers between 26 and 30, 22 fathers and 32 mothers between 31 and 35, 14 fathers and 11 mothers between 36 and 40, 3 fathers and 11 mothers between 41 and 45, and 2 fathers between 51 and 55; 124 fathers and 126 mothers were of American nationality, 1 father and 1 mother of British North-American, 7 fathers and 7 mothers of English, 2 fathers and 2 mothers of Irish, 1 father of Scotch, 4 fathers and 3 mothers of German, 3 fathers and 2 mothers of Scandinavian, and 1 mother of French. There were 3 still-births and 1 twin.

IN BUTLER county, the total number of births returned is 134. Of this number, 58 were males, and 76 females; all were white; 42 were the first child of mothers, 23

the second, 15 the third, 18 the fourth, 8 the fifth, 10 the sixth, 3 the seventh, 5 the eighth, 1 the ninth, and 1 the tenth; there were 4 still-births, and 1 pair of twins; 2 mothers were under 15 years of age, 24 mothers between 16 and 20, 19 fathers and 21 mothers between 21 and 25, 29 fathers and 29 mothers between 26 and 30, 36 fathers and 25 mothers between 31 and 35, 22 fathers and 8 mothers between 36 and 40, 9 fathers and 1 mother between 31 and 45, 4 fathers between 46 and 50, and 1 father over 55; 115 fathers and 122 mothers were of American nationality, 8 fathers and 1 mother of English, 1 father and 1 mother of Irish, 1 father of Scotch, 3 fathers and 4 mothers of German, 2 fathers and 1 mother of French, and 1 father and 2 mothers of Swiss.

In CHASE county, the total number of births returned is 54. Of these, 31 were males, and 23 females; 53 were white, and 1 colored; 15 were the first child of mothers, 8 the second, 12 the third, 2 the fourth, 11 the fifth, 2 the sixth, 4 the seventh, and 1 the eleventh; there were 2 twins; all were born in towns of less than 500 population, and in the country; 11 mothers were between 16 and 20 years of age, 6 fathers and 12 mothers between 21 and 25, 11 fathers and 9 mothers between 26 and 30, 13 fathers and 10 mothers between 31 and 35, 10 fathers and 4 mothers between 36 and 40, 7 fathers and 2 mothers between 41 and 45, and 2 fathers between 46 and 50; 39 fathers and 39 mothers were of American nationality, 1 father and 1 mother of English, 1 father and one mother of Irish, 2 fathers and 1 mother of Scotch, 6 fathers and 9 mothers of German, and 1 father of French.

In CHEYENNE county, the total number of births returned is 6. Of these, 5 were males, and 1 female; all were white; 2 were the first child of mothers, 1 the second, 1 the seventh, and 2 the eleventh or more.

In CLAY county, the total number of births returned is 77. Of these, 41 were males, 35 females, and the sex of one not given; 68 were white, and 9 colored; 18 were the first child of mothers, 15 the second, 13 the third, 9 the fourth, 6 the fifth, 4 the sixth, 3 the seventh, 3 the eighth, 1 the tenth, and 5 not given; 18 were born in cities and towns of 500 to 5,000 population, and 59 in towns under 500 population, and in the country; 15 mothers were between 16 and 20 years of age, 9 fathers and 17 mothers between 21 and 25, 15 fathers and 22 mothers between 26 and 30, 20 fathers and 11 mothers between 31 and 35, 16 fathers and 4 mothers between 36 and 40, 6 fathers between 41 and 45, 1 mother over 45, 2 fathers between 46 and 50, 3 fathers between 51 and 55, and the age of 6 fathers and 7 mothers not given; 41 fathers and 47 mothers were of American nationality, 4 fathers and 1 mother of British North-American, 8 fathers and 6 mothers of English, 1 father of Irish, 1 father of Scotch, 1 father and 1 mother of German, 20 fathers and 21 mothers of Scandinavian, and 1 mother of French. There was 1 pair of twins.

In CLOUD county, the total number of births returned is 8. Of these, 6 were males, and 2 females; all were white; 2 were the first child of mothers, 1 the fifth, 3 the sixth, and 2 the ninth; there was 1 pair of twins; all were born in towns of less than 500 population, and in the country; 1 mother was between 16 and 20 years of age, 2 fathers and 1 mother between 21 and 25, 1 father and 1 mother between 26 and 30, 3 fathers and 4 mothers between 36 and 40, and 1 father between 46 and 50; 4 fathers and 3 mothers were of American nationality, 2 fathers and four mothers of British North-American, and 1 father of English.

In CRAWFORD county, the total number of births returned is 350. Of this number, 87 were the first child of mothers, 72 the second, 41 the third, 25 the fourth, 36

the fifth, 19 the sixth, 14 the seventh, 11 the eighth, 6 the ninth, 1 the tenth, and 13 the eleventh or more; there were 11 still-births, 3 illegitimate children and 2 twins; 47 were born in cities or towns of 5,000 (or over) population, 112 in cities and towns of 500 to 5,000 population, and 191 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 61 mothers between 16 and 20, 1 father under 20, 59 fathers and 92 mothers between 21 and 25, 92 fathers and 75 mothers between 26 and 30, 59 fathers and 56 mothers between 31 and 35, 43 fathers and 27 mothers between 36 and 40, 25 fathers and 17 mothers between 41 and 45, 4 mothers over 45, 18 fathers between 46 and 50, 9 fathers between 51 and 55, and 3 fathers over 55; 268 fathers and 280 mothers were of American nationality, 7 fathers and 1 mother of British North-American, 14 fathers and 12 mothers of English, 5 fathers and 5 mothers of Irish, 6 fathers and 6 mothers of Scotch, 28 fathers and 29 mothers German, 2 fathers and 2 mothers of Polish, 6 fathers and 4 mothers of French, 2 fathers of Swiss, and 2 fathers and 3 mothers of Belgium.

In DECATUR county, the total number of births returned is 106. Of these, 55 were males, 50 females, and the sex of 1 not given; all were white; 33 were the first child of mothers, 31 the second, 12 the third, 11 the fourth, 5 the fifth, 3 the sixth, 5 the seventh, 2 the eighth, 2 the ninth, 1 the tenth, and 1 the eleventh or more; there were 2 still-births, 1 illegitimate child, and 2 twins; all were born in cities and towns of 500 to 5,000 population; 22 mothers were between 16 and 20 years of age, 21 fathers and 37 mothers between 21 and 25, 33 fathers and 23 mothers between 26 and 30, 25 fathers and 13 mothers between 31 and 35, 15 fathers and 6 mothers between 36 and 40, 7 fathers between 41 and 45, 2 fathers between 46 and 50, and the age of 2 fathers and 1 mother not given; 98 fathers and 100 mothers were of American nationality, 1 father and 1 mother of British North-American, 4 fathers and 1 mother of English, 2 fathers and 2 mothers of German, and 1 mother of French.

In DICKINSON county, the total number of births returned is 6. Of these, 5 were females, and 1 male; 1 was the first child of mother, 1 the second, 1 the fourth, 1 the fifth, 1 the tenth, and 1 the eleventh; all were white; all were born in towns of less than 500 population, and in the country; 1 father and 2 mothers were between 21 and 25 years of age, 2 fathers and 1 mother between 26 and 30, 1 father and 3 mothers between 31 and 35, and 2 fathers between 41 and 45; 3 fathers and 3 mothers were of American nationality, and 3 fathers and 3 mothers of Scandinavian.

In DONIPHAN county, the total number of births returned is 27. Of these, 13 were males, and 14 females; all were white; 7 were the first child of mothers, 10 the second, 3 the third, 4 the fourth, 2 the fifth, and 1 the seventh; 5 were born in cities and towns of 500 to 5,000 population, and 22 in towns of less than 500 population, and in the country; 1 father was under 20 years of age, 2 fathers and 4 mothers were between 21 and 25, 9 fathers and 4 mothers between 26 and 30, 8 fathers and 12 mothers between 31 and 35, 3 fathers and 6 mothers between 36 and 40, 2 fathers between 41 and 45, and 1 father between 51 and 55; 22 fathers and 22 mothers were of American nationality, 1 father of Canadian, 1 father of Irish, 1 mother of German, 3 fathers and 3 mothers of Scandinavian, and 1 mother of French.

In ELLIS county, the total number of births returned is 22. Of these, 12 were males, and 10 females; all were white; 4 were the first child of mothers, 11 the second, 3 the third, 3 the fourth, and 1 the fifth; 1 mother was between 16 and 20 years of age, 2 fathers and 10 mothers between 21 and 25, 14 fathers and 6 mothers between 26 and 30, 2 fathers and 1 mother between 31 and 35, 2 fathers and 4 mothers



between 36 and 40, and 2 fathers between 41 and 45; 16 fathers and 16 mothers were of American nationality, 1 father of Irish, 3 fathers and 4 mothers of German, and 2 fathers and 2 mothers of Scandinavian.

In ELLSWORTH county, the total number of births returned is 101. Of these, 43 were males, and 54 females; 98 were white, and 3 colored; 26 were the first child of mothers, 14 the second, 15 the third, 7 the fourth, 12 the fifth, 6 the sixth, 4 the seventh, 3 the eighth, 2 the ninth, 3 the tenth, and 1 the eleventh; 45 were born in cities and towns of 500 to 5,000 population, and 56 in towns under 500 population, and in the country; 1 mother was under 15 years of age, 12 mothers between 16 and 20, 12 fathers and 24 mothers between 21 and 25, 21 fathers and 17 mothers between 26 and 30, 23 fathers and 19 mothers between 31 and 35, 17 fathers and 14 mothers between 36 and 40, 15 fathers and 3 mothers between 41 and 45, 2 fathers between 46 and 50, and 1 father between 51 and 55; 69 fathers and 73 mothers were of American nationality, 2 fathers of British North-American, 3 fathers and 1 mother of English, 4 fathers and 5 mothers of Irish, 1 mother of Scotch, 15 fathers and 14 mothers of German, 1 mother of Scandinavian, and 5 fathers and 6 mothers of Austrian.

In FINNEY county, the total number of births returned is 46. Of these, 14 were males, 31 females, and the sex of 1 not given; 45 were white, and 1 colored; 18 were the first child of mothers, 10 the second, 11 the third, 2 the fourth, 6 the fifth, 1 the eighth, and 1 the ninth; there was 1 pair of twins: 1 mother was between 16 and 20 years of age, 2 fathers and 6 mothers between 21 and 25, 6 fathers and 7 mothers between 26 and 30, 7 fathers and 3 mothers between 31 and 35, 2 fathers and 2 mothers between 36 and 40, 1 father between 41 and 45, and the ages of 27 fathers and 28 mothers not given; 43 fathers and 43 mothers were of American nationality, 1 mother of Irish, 1 father of Scotch, 1 father and 2 mothers of German, and 1 father of Swiss.

In FORD county, the total number of births returned is 105. Of these, 62 were males, and 42 females; 38 were the first child of mothers, 24 the second, 19 the third, 12 the fourth, 5 the fifth, 2 the sixth, 2 the seventh, 2 the eighth, and 1 the ninth; there were 10 still-births, and 1 twin; 1 father was under 20 years of age, 7 mothers between 16 and 20, 9 fathers and 34 mothers between 21 and 25, 20 fathers and 31 mothers between 26 and 30, 28 fathers and 17 mothers between 31 and 35, 24 fathers and 5 mothers between 36 and 40, 8 fathers between 41 and 45, and 4 fathers between 46 and 50; 85 fathers and 87 mothers were of American nationality, 6 fathers of British North American, 5 mothers of English, 7 fathers and 4 mothers of Irish, 6 fathers of Scotch, 8 mothers of German, and 1 mother of Scandinavian.

In FRANKLIN county, the total number of births returned is 61. Of these, 31 were males, and 30 females; all were white; 14 were the first child of mothers, 8 the second, 10 the third, 10 the fourth, 5 the fifth, 4 the sixth, 4 the seventh, 4 the eighth, 1 the ninth, and 1 the eleventh; there were 3 still-births; 3 mothers were between 16 and 20 years of age, 3 fathers and 19 mothers between 21 and 25, 16 fathers and 16 mothers between 26 and 30, 14 fathers and 11 mothers between 31 and 35, 12 fathers and 7 mothers between 36 and 40, 8 fathers and 4 mothers between 41 and 45, 1 mother over 45, 4 fathers between 46 and 50, and 4 fathers between 51 and 55; 49 fathers and 50 mothers were of American nationality, 1 father and 1 mother of English, 5 fathers and 3 mothers of Irish, 1 mother of Scotch, 4 fathers and 5 mothers of German, 1 father and 1 mother of Scandinavian, and 1 father of French.

In GARFIELD county, the number of births returned is 31.

In GEARY county, the total number of births returned is 132. Of these, 70 were males, 61 females, and the sex of 1 not given; 126 were white, and 6 colored; 31 were the first child of mothers, 24 the second, 19 the third, 11 the fourth, 17 the fifth, 5 the sixth, 9 the seventh, 1 the eighth, 6 the ninth, and 3 the tenth; 21 mothers were between 16 and 20 years of age, 17 fathers and 37 mothers between 21 and 25, 34 fathers and 29 mothers between 26 and 30, 26 fathers and 20 mothers between 31 and 35, 29 fathers and 14 mothers between 36 and 40, 11 fathers and 8 mothers between 41 and 45, 1 mother over 45, 2 fathers between 46 and 50, 3 fathers between 51 and 55, and 3 fathers over 55; 94 fathers and 107 mothers were of American nationality, 1 father of British North-American, 11 fathers and 6 mothers of English, 6 fathers and 6 mothers of Irish, 1 father and 1 mother of Scotch, 10 fathers and 5 mothers of German, 7 fathers and 8 mothers of Scandinavian, 1 father of French, and 1 father of Dutch.

In GOVE county, there was one birth returned; male, white, the third child of mother; the father and mother were between 21 and 25 years of age, and of American nationality.

In GRAY county, there was one birth returned; female, white; first child of mother; the father and mother were between 26 and 30 years of age, and of American nationality.

In GRAHAM county, the total number of births returned is 45. Of these, 21 were males, and 27 females; all were white; 19 were the first child of mothers, 26 the second, 16 the third, 23 the fourth, 21 the fifth, and 4 the sixth; 8 mothers were between 16 and 20 years of age, 8 fathers and 17 mothers between 21 and 25, 10 fathers between 26 and 30, 16 fathers and 3 mothers between 31 and 35, 6 fathers between 36 and 40, and 3 fathers and 1 mother between 41 and 45; 40 fathers and 42 mothers were of American nationality, 2 fathers and 1 mother of English, 1 father and 1 mother of Irish, 2 fathers and 1 mother of German, and 1 father of French.

In HODGEMAN county, the total number of births returned is 38. Of these, 18 were males, and 20 females; 37 were white, and 1 colored; 13 were the first child of mothers, 12 the second, 4 the third, 3 the fourth, 1 the fifth, 2 the sixth, 2 the seventh, and 1 the eleventh; 25 were born in cities and towns of 500 to 5,000 population, and 13 in towns of less than 500 population, and in the country; there was 1 pair of twins; 1 father was under 20 years of age, 3 mothers were between 16 and 20 years of age, 3 fathers and 11 mothers between 21 and 25, 14 fathers and 9 mothers between 26 and 30, 7 fathers and 5 mothers between 31 and 35, 2 fathers and 3 mothers between 36 and 40, 7 fathers and 4 mothers between 41 and 45, and 1 father over 55; 33 fathers and 34 mothers were of American nationality, 1 father of Irish, 2 fathers and 2 mothers of German, and 1 father and 1 mother of Swiss.

In JACKSON county, the total number of births returned is 18. Of these, 14 were males, and 4 females; all were white; 6 were the first child of mothers, 1 the second, 3 the third, 3 the fourth, 1 the fifth, 2 the sixth, 1 the eighth, and 1 the tenth; there was 1 still birth and 1 pair of twins; 9 were born in towns and cities of 500 to 5,000 population, and 9 in towns of less than 500 population, and in the country; 3 mothers were between 16 and 20 years of age; 4 fathers and 6 mothers between 21 and 25, 3 fathers and 2 mothers between 26 and 30, 4 fathers and 6 mothers between

31 and 35, 4 fathers and 1 mother between 36 and 40, 2 fathers between 41 and 45, and 1 father between 46 and 50; 17 fathers and 18 mothers were of American nationality, and 1 father of Irish.

In JEFFERSON county, the total number of births returned is 38. Of these, 14 were males, and 24 females; 10 were the first child of mothers, 3 the second, 5 the third, 6 the fourth, 4 the fifth, 5 the sixth, 2 the seventh, and 1 the eleventh; there was 1 still-birth, and 1 pair of twins; 22 were born in cities and towns of 500 to 5,000 population, and 16 in towns of less than 500 population, and in the country; 5 mothers were between 16 and 20 years of age, 9 fathers and 9 mothers between 21 and 25, 9 fathers and 12 mothers between 26 and 30, 4 fathers and 6 mothers between 31 and 35, 7 fathers and 4 mothers between 36 and 40, 3 fathers and 2 mothers between 41 and 45, 4 fathers between 46 and 50, 1 father between 51 and 55, and 1 father over 55; 37 fathers and 37 mothers are of American nationality, and 1 father and 1 mother of Irish.

In JEWELL county, the total number of births returned is 88. Of these, 33 were males, 51 females, and the sex of 4 not given; all were white; 14 were the first child of mothers, 16 the second, 6 the third, 11 the fourth, 13 the fifth, 7 the sixth, 10 the seventh, 1 the tenth, and 1 the eleventh; there were 4 still-births, and 1 pair of twins; 1 father was under 20 years of age, 13 mothers were between 16 and 20, 11 fathers and 26 mothers between 21 and 25, 23 fathers and 18 mothers between 26 and 30, 15 fathers and 8 mothers between 31 and 35, 13 fathers and 10 mothers between 36 and 40, 12 fathers and 4 mothers between 41 and 45, 3 fathers between 46 and 50, 1 father between 51 and 55, and 1 father over 55; 76 fathers and 76 mothers were of American nationality, 1 father and 1 mother of English, 6 fathers and 7 mothers of German, and 1 father of Dutch.

In JOHNSON county, the total number of births returned is 208. Of these, 101 were males, and 107 females; 198 were white, and 10 colored; 59 were the first child of mothers, 42 the second, 29 the third, 20 the fourth, 20 the fifth, 15 the sixth, 5 the seventh, 7 the eighth, 4 the ninth, 2 the tenth, and 2 the eleventh or more; there were 2 illegitimate children, and 2 twins; 63 were born in cities and towns of 500 to 5,000 population, and 145 in towns of less than 500 population, and in the country; 2 fathers were under 20 years of age, 24 mothers were between 16 and 20, 34 fathers and 60 mothers between 21 and 25, 43 fathers and 48 mothers between 26 and 30, 53 fathers and 42 mothers between 31 and 35, 39 fathers and 23 mothers between 36 and 40, 17 fathers and 8 mothers between 41 and 45, 14 fathers between 46 and 50, 3 fathers between 51 and 55, and 2 fathers over 55; 198 fathers and 204 mothers were of American nationality, 1 mother of English, 1 mother of Irish, 6 fathers and 2 mothers of German, and 1 father of Scandinavian.

In KEARNY county, the total number of births returned is 18. Of these, 9 were males, and 9 females; all were white; 6 were the first child of mothers, 4 the second, 5 the third, 1 the fourth, 1 the sixth, and 1 the seventh; all were born in towns of less than 500 population, and in the country; there was 1 pair of twins; 3 mothers were between 16 and 20 years of age, 1 father and 4 mothers between 21 and 25, 6 fathers and 6 mothers between 26 and 30, 5 fathers and 2 mothers between 31 and 35, 3 mothers between 36 and 40, 4 fathers between 41 and 45, and 2 fathers between 46 and 50; 16 fathers and 17 mothers were of American nationality, 1 father of British North-American, and 1 father and 1 mother of English.

IN KINGMAN county, the total number of births returned is 149. Of these, 70 were males, and 79 females; 142 were white, and 7 colored; 34 were the first child of mothers, 31 the second, 16 the third, 17 the fourth, 12 the fifth, 10 the sixth, 3 the seventh, 6 the eighth, 6 the ninth, and 1 the eleventh; there was 1 pair of twins; 79 were born in cities and towns of 500 to 5,000 population, and 70 in towns of less than 500 population, and in the country; 19 mothers were between 16 and 20 years of age, 15 fathers and 41 mothers between 21 and 25, 37 fathers and 42 mothers between 26 and 30, 37 fathers and 16 mothers between 31 and 35, 27 fathers and 22 mothers between 36 and 40, 19 fathers and 5 mothers between 41 and 45, 1 mother over 45, 8 fathers between 46 and 50, 1 father between 51 and 55, and 2 fathers over 55; 138 fathers and 141 mothers were of American nationality, 2 fathers and 2 mothers of British North-American, 2 mothers of English, 1 father of Irish, 1 father of Scotch, 3 fathers and 2 mothers of German, and 1 father of Scandinavian.

IN LABETTE county, the total number of births returned is 138. Of these, 80 were males, 50 females, and the sex of 3 not given; 125 were white, and 13 colored; 35 were the first child of mothers, 22 the second, 15 the third, 16 the fourth, 14 the fifth, 6 the sixth, 6 the seventh, 4 the eighth, 4 the ninth, 3 the tenth, and 4 the eleventh or more; there were three still-births, 7 illegitimate children, and 4 twins; 33 were born in cities and towns of 500 to 5,000 population, and 105 in towns of less than 500 population, and in the country; 27 mothers were between 16 and 20 years of age, 21 fathers and 41 mothers between 21 and 25, 35 fathers and 26 mothers between 26 and 30, 20 fathers and 11 mothers between 31 and 35, 16 fathers and 13 mothers between 36 and 40, 17 fathers and 8 mothers between 41 and 45, 9 fathers between 46 and 50, 4 fathers between 51 and 55, and 3 fathers over 55; 118 fathers and 122 mothers were of American nationality, 3 fathers and 1 mother of English, 2 fathers and 1 mother of Irish, 3 fathers and 2 mothers of Scotch, and 7 fathers and 5 mothers of German.

IN LANE county, the total number of births returned is 28. Of these, 16 were males, and 12 females; all were white; 8 were the first child of mothers, 6 the second, 2 the third, 3 the fourth, 3 the fifth, 4 the sixth, 1 the seventh, and 1 the ninth; there was 1 pair of twins; all were born in towns of less than 500 population, and in the country; 2 mothers were between 16 and 20 years of age, 2 fathers and 5 mothers between 21 and 25, 9 fathers and 13 mothers between 26 and 30, 10 fathers and 6 mothers between 31 and 35, 5 fathers between 36 and 40, and 1 father and 1 mother between 41 and 45; 25 fathers and 26 mothers were of American nationality, 1 father and 1 mother of British North-American, and 1 father of German.

IN LEAVENWORTH county, the total number of births returned is 20. Of these, 11 were males, and 9 females; 18 were white, and 2 colored; 10 were the first child of mothers, 5 the second, 2 the third, 2 the eighth, and 1 the ninth; there was 1 still-birth, and 1 pair of twins; 16 were born in cities and towns of 5,000 (or over) population, and 4 in towns of less than 500 population, and in the country; 5 mothers were between 16 and 20 years of age, 2 fathers and 9 mothers between 21 and 25, 9 fathers and 2 mothers between 26 and 30, 6 fathers and 2 mothers between 31 and 35, and 2 fathers and 2 mothers between 36 and 40; 13 fathers and 14 mothers were of American nationality, 1 father of Irish, 1 mother of Scotch, 3 fathers and 3 mothers of German, 1 father and 1 mother of Polish, and 2 fathers and 1 mother of French.

IN LINCOLN county, the total number of births returned is 136. Of these, 70 were males, and 66 females; all were white; 31 were the first child of mothers, 31 the sec-



ond, 21 the third, 15 the fourth, 9 the fifth, 6 the sixth, 7 the seventh, 3 the eighth, 3 the ninth, 5 the tenth, and 3 the eleventh or more; there was 1 illegitimate child, and 1 twin; 35 were born in towns or cities of 500 to 5,000 population, and 101 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 2 fathers under 20, 22 mothers between 16 and 20, 16 fathers and 33 mothers between 21 and 25, 38 fathers and 34 mothers between 26 and 30, 21 fathers and 17 mothers between 31 and 35, 22 fathers and 14 mothers between 36 and 40, 20 fathers and 7 mothers between 41 and 45, 3 mothers over 45, 5 fathers between 46 and 50, 3 fathers between 51 and 55, and 2 fathers over 55; 98 fathers and 109 mothers were of American nationality, 1 father of British North-American, 3 fathers of English, 1 father and 1 mother of Irish, 9 fathers and 8 mothers of German, 16 fathers and 14 mothers of Scandinavian, 1 father of Polish, and 2 fathers of Swiss.

In LINN county, the total number of births returned is 89. Of these, 41 were males, 47 females, and the sex of 1 not given; 88 were white, and 1 colored; 25 were the first child of mothers, 14 the second, 11 the third, 11 the fourth, 11 the fifth, 2 the sixth, 5 the seventh, 5 the eighth, 2 the ninth, and 2 the tenth; there were 4 still-births, and 1 pair of twins; 28 were born in cities and towns of 500 to 5,000 population, and 60 in towns of less than 500 population, and in the country; 11 mothers were between 16 and 20 years of age, 13 fathers and 22 mothers between 21 and 25, 19 fathers and 23 mothers between 26 and 30, 26 fathers and 15 mothers between 31 and 35, 13 fathers and 13 mothers between 36 and 40, 9 fathers and 4 mothers between 41 and 45, 3 fathers between 46 and 50, 3 fathers between 51 and 55, and 1 father over 55; 82 fathers and 87 mothers were of American nationality, 1 father of British North-American, 2 fathers and 1 mother of English, 1 father of Scotch, 1 father of German, 2 fathers of Swiss, and 1 mother of Italian.

In LYON county, the total number of births reported is 39. Of these, 21 were males, and 18 females; all were white; 12 were the first child of mothers, 7 the second, 6 the third, 1 the fourth, 9 the fifth, 1 the sixth, 1 the seventh, 1 the ninth, and 1 the tenth; there were 2 twins; 21 were born in cities of 5,000 (or over) population, and 18 in towns of less than 500 population, and in the country; 5 mothers were between 16 and 20 years of age, 5 fathers and 17 mothers between 21 and 25, 14 fathers and 5 mothers between 26 and 30, 5 fathers and 7 mothers between 31 and 35, 2 fathers and 3 mothers between 36 and 40, 4 fathers and 2 mothers between 41 and 45, 3 fathers between 46 and 50, and 2 fathers between 51 and 55; 32 fathers and 34 mothers were of American nationality, 4 fathers and 2 mothers of British North-American, 1 mother of English, 1 mother of Scotch, 1 father of Scandinavian, and 1 mother of Swiss.

In MARION county, the total number of births returned is 242. Of these, 128 were males, and 114 females; all were white; 47 were the first child of mothers, 50 the second, 37 the third, 23 the fourth, 28 the fifth, 14 the sixth, 15 the seventh, 7 the eighth, 8 the ninth, and 6 the tenth; there were 19 still-births; 7 fathers were under 20 years of age, 35 mothers were between 16 and 20, 35 fathers and 62 mothers between 21 and 25, 62 fathers and 63 mothers between 26 and 30, 46 fathers and 34 mothers between 31 and 35, 41 fathers and 24 mothers between 36 and 40, 28 fathers and 10 mothers between 41 and 45, 3 mothers over 45, 8 fathers between 46 and 50, 4 fathers between 51 and 55, and 1 father over 55; 133 fathers and 146 mothers were of American nationality, 7 fathers and 7 mothers of British North-American, 6 fathers and 2 mothers of English, 1 father and 1 mother of Scotch, 87 fathers and 76 mothers of German, 4 fathers and 3 mothers of Scandinavian, and 3 mothers of Swiss.

In MARSHALL county, the total number of births returned is 354. Of these, 161 were males, and 193 females; 346 were white, and 8 colored; 82 were the first child of mothers, 68 the second, 53 the third, 54 the fourth, 28 the fifth, 20 the sixth, 16 the seventh, 16 the eighth, 5 the ninth, 4 the tenth, and 6 the eleventh or more; there were 10 still-births, 6 illegitimate children, and 4 twins; 118 were born in cities and towns of 500 to 5,000 population, and 236 in towns of less than 500 population, and in the country; 3 fathers were under 20 years of age, 64 mothers were between 16 and 20. 78 fathers and 81 mothers between 21 and 25, 73 fathers and 69 mothers between 26 and 30, 71 fathers and 49 mothers between 31 and 35, 47 fathers and 47 mothers between 36 and 40, 30 fathers and 22 mothers between 41 and 45, 6 mothers over 45, 22 fathers between 46 and 50, 15 fathers between 51 and 55, and 15 fathers over 55; 270 fathers and 280 mothers were of American nationality, 2 fathers of British North-American, 19 fathers and 18 mothers of English, 28 fathers and 24 mothers of German, 1 father and 1 mother of Swiss, 1 father of Italian, and 23 fathers and 31 mothers of other nationalities.

In McPHERSON county, the total number of births returned is 170. Of these, 80 were males, and 90 females; all were white; 58 were the first child of mothers, 22 the second, 23 the third, 14 the fourth, 15 the fifth, 14 the sixth, 9 the seventh, 4 the eighth, 4 the ninth, and 3 the eleventh or more; there was one pair of twins; 1 mother was under 15 years of age, 32 mothers between 16 and 20, 29 fathers and 34 mothers between 21 and 25, 29 fathers and 31 mothers between 26 and 30, 32 fathers and 23 mothers between 31 and 35, 31 fathers and 19 mothers between 36 and 40, 14 fathers and 8 mothers between 41 and 45, 10 fathers between 46 and 50, 3 fathers between 51 and 55, and 2 fathers over 55; 115 fathers and 115 mothers were of American nationality, 1 father and 1 mother of Irish, 1 mother of Scotch, 6 fathers and 4 mothers of German, and 40 fathers and 39 mothers of Scandinavian.

In MEADE county, the total number of births returned is 24. Of these, 12 were males, and 12 females; all were white; 6 were the first child of mothers, 6 the second, 2 the third, 4 the fourth, 3 the fifth, 1 the sixth, 1 the seventh, and 1 the ninth; 22 fathers and 24 mothers were of American nationality, 1 father of English, and 1 father of Irish.

In MIAMI county, the total number of births returned is 118. Of these, 74 were males, 43 females, and the sex of 1 not given; 110 were white, and 8 colored; 30 were the first child of mothers, 27 the second, 19 the third, 9 the fourth, 7 the fifth, 2 the sixth, 4 the seventh, 5 the eighth, 2 the tenth, and 3 the eleventh or more; there was 1 still-birth, and 2 twins; 34 were born in cities of 5,000 (or over) population, 11 in cities and towns of 500 to 5,000 population, and 73 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 2 fathers under 20, 17 mothers between 16 and 20, 15 fathers and 32 mothers between 21 and 25, 26 fathers and 24 mothers between 26 and 30, 32 fathers and 15 mothers between 31 and 35, 6 fathers and 2 mothers between 36 and 40, 6 fathers and 2 mothers between 41 and 45, 3 mothers over 45, 4 fathers between 46 and 50, and 3 fathers over 55; 75 fathers and 86 mothers were of American nationality, 1 father and 2 mothers of English, 3 fathers and 1 mother of Irish, and 8 fathers and 2 mothers of German.

In MONTGOMERY county, the total number of births returned is 168. Of these, 80 were males, 87 females, and the sex of 2 not given; 164 were white, and 4 colored; 45 were the first child of mothers, 27 the second, 21 the third, 20 the fourth, 11 the fifth, 16 the sixth, 8 the seventh, 9 the eighth, 6 the ninth, 2 the tenth, and 2 the eleventh

or more; there were 3 still-births and 2 twins; 30 were born in cities of 5,000 (or over) population, 63 in towns and cities of 500 to 5,000 population, and 75 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 1 father under 20, 14 mothers between 16 and 20, 20 fathers and 39 mothers between 21 and 25, 31 fathers and 32 mothers between 26 and 30, 40 fathers and 32 mothers between 31 and 35, 22 fathers and 16 mothers between 36 and 40, 21 fathers and 14 mothers between 41 and 45, 2 mothers over 45, 19 fathers between 46 and 50, and 6 fathers between 51 and 55; 144 fathers and 146 mothers were of American nationality, 2 fathers and 2 mothers of British North-American, 2 fathers and 3 mothers of English, 3 fathers and 2 mothers of Irish, 2 mothers of Scotch, 12 fathers and 7 mothers of German, 1 father and 1 mother of French, 1 father and 1 mother of Swiss, and 2 mothers of Dutch.

In NEMAH county, the total number of births returned is 139. Of these, 64 were males and 75 females; all were white; 33 were the first child of mothers, 35 the second, 22 the third, 20 the fourth, 11 the fifth, 8 the sixth, 5 the seventh, 6 the eighth, 2 the ninth, and 1 the tenth; there were 2 twins; 27 were born in cities and towns of 500 to 5,000 population, and 112 in towns of less than 500 population, and in the country; 2 fathers were under 20 years of age, 17 mothers between 16 and 20, 19 fathers and 35 mothers between 21 and 25, 42 fathers and 44 mothers between 26 and 30, 41 fathers and 23 mothers between 31 and 35, 21 fathers and 13 mothers between 36 and 40, 10 fathers and 5 mothers between 41 and 45, 1 father between 51 and 55, and one father over 55; 123 fathers and 119 mothers were of American nationality, 3 fathers and 1 mother of British North-American, 4 fathers and 2 mothers of English, 5 fathers and 2 mothers of Irish, 1 mother of Scotch, 11 fathers and 12 mothers of German, 1 father of Austrian, and 1 father of Swiss.

In NEOSHO county, the total number of births returned is 11. Of these, 4 were males, and 7 females; all were white; 1 was the first child of mother, 3 the second, 2 the fourth, 1 the sixth, and 2 the seventh; there were two twins; 3 were born in cities and towns of 500 to 5,000 population, and 8 in towns of less than 500 population, and in the country; 1 father was under 20 years of age, 1 mother between 16 and 20, 1 father and 3 mothers between 21 and 25, 1 father and 1 mother between 26 and 30, 2 fathers and 5 mothers between 31 and 35, 4 fathers and 1 mother between 36 and 40, 1 father between 46 and 50, and 1 father over 55; fathers and mothers were all of American nationality.

In NESS county, the total number of births returned is 88. Of these, 46 were males, and 42 females; all were white; 17 were the first child of mothers, 22 the second, 16 the third, 10 the fourth, 12 the fifth, 3 the sixth, 3 the seventh, 1 the eighth, 2 the ninth, and 1 the tenth; there were 6 twins; 6 mothers were between 16 and 20 years of age, 4 fathers and 22 mothers between 21 and 25, 19 fathers and 20 mothers between 26 and 30, 29 fathers and 16 mothers between 31 and 35, 16 fathers and 7 mothers between 36 and 40, 4 fathers and 1 mother between 41 and 45, and 2 fathers between 46 and 50; 68 fathers and 71 mothers were of American nationality, 5 fathers and 2 mothers of British North-American, 3 fathers and 1 mother of English, 1 father and 1 mother of Irish, 1 mother of Scotch, 5 fathers and 6 mothers of German, 1 father of Austrian, and 2 fathers and 2 mothers of Swiss.

In NORTON county, the total number of births returned is 55. Of these, 25 were males, and 30 females; all were white; 11 were the first child of mothers, 14 the second, 8 the third, 7 the fourth, 6 the fifth, 3 the sixth, 4 the seventh, 1 the eighth, and

1 the tenth; there was 1 pair of twins; 21 were born in cities and towns of 500 to 5,000 population, and 24 in towns of less than 500 population, and in the country; 5 mothers were between 16 and 20 years of age, 7 fathers and 14 mothers between 21 and 25, 8 fathers and 12 mothers between 26 and 30, 16 fathers and 7 mothers between 31 and 35, 8 fathers and 7 mothers between 36 and 40, 6 fathers and 1 mother between 41 and 45, and 2 fathers between 46 and 50; 53 fathers and 50 mothers were of American nationality, 1 mother of English, 1 mother of German, 1 mother of Swiss, and 1 father of Dutch.

In OSAGE county, the total number of births returned is 178. Of these, 93 were males, and 78 females, and the sex of 7 not given; 170 were white, and 8 colored; 33 were the first child of mothers, 19 the second, 33 the third, 18 the fourth, 20 the fifth, 11 the sixth, 11 the seventh, 8 the eighth, 3 the ninth, 3 the tenth, and 2 the eleventh or more; there were 8 still-births, and 3 twins; 127 were born in cities and towns of 500 to 5,000 population, and 51 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 11 were between 16 and 20, 16 fathers and 37 mothers between 21 and 25, 43 fathers and 38 mothers between 26 and 30, 24 fathers and 26 mothers between 31 and 35, 29 fathers and 20 mothers between 36 and 40, 16 fathers and 4 mothers between 41 and 45, 6 fathers between 46 and 50, 3 fathers between 51 and 55, and 1 father over 55; 130 fathers and 131 mothers were of American nationality, 1 father and 1 mother of British North-American, 10 fathers and 9 mothers of English, 4 fathers and 3 mothers of Irish, 3 fathers and 3 mothers of Scotch, 6 fathers and 6 mothers of German, 13 fathers and 15 mothers of Scandinavian, 1 father of French, and 1 father and 1 mother of Italian.

In OSBORNE county, the total number of births returned is 176. Of these, 80 were males, 94 females, and the sex of two not given; 175 were white, and 1 colored; 32 were the first child of mothers, 30 the second, 26 the third, 24 the fourth, 24 the fifth, 12 the sixth, 7 the seventh, 9 the eighth, 1 the ninth, 2 the tenth, and 6 the eleventh or more; there were eight still-births, and 2 illegitimate children; 61 were born in cities and towns of 500 to 5,000 population, and 116 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 21 between 16 and 20, 17 fathers and 34 mothers between 21 and 25, 42 fathers and 43 mothers between 26 and 30, 31 fathers and 23 mothers between 31 and 35, 26 fathers and 21 mothers between 36 and 40, 19 fathers and 10 mothers between 41 and 45, 11 fathers between 46 and 50, 4 between 51 and 55, and 1 over 55; 145 fathers and 153 mothers of American nationality, 4 fathers and 1 mother of British North-American, 7 fathers and 3 mothers of English, 1 father of Irish, 6 fathers and 8 mothers of German, and 1 mother of Swiss.

In PHILLIPS county, the total number of births returned is 103. Of these, 52 were males, and 51 females; 102 were white, and 1 colored; 27 were the first child of mothers, 16 the second, 19 the third, 15 the fourth, 5 the fifth, 3 the sixth, 5 the seventh, 3 the eighth, 2 the tenth, and 4 the eleventh or more; there was 1 still-birth, and 2 twins; 17 mothers were between 16 and 20 years of age, 21 fathers and 21 mothers between 21 and 25, 23 fathers and 35 mothers between 26 and 30, 18 fathers and 18 mothers between 31 and 35, 16 fathers and 6 mothers between 36 and 40, 16 fathers and 6 mothers between 41 and 45, 1 mother over 45, 2 fathers between 46 and 50, 3 fathers between 51 and 55, and 1 father over 55; 92 fathers and 97 mothers were of American nationality, 2 mothers of British North-American, 2 fathers and 1 mother of English, 3 fathers of Irish, 3 fathers and 2 mothers of German, and 2 fathers and 1 mother of Dutch.



IN POTTAWATOMIE county, the total number of births returned is 210. Of these, 113 were males, 91 females, and the sex of 6 not given; all were white; 43 were the first child of mothers, 43 the second, 31 the third, 24 the fourth, 18 the fifth, 15 the sixth, 9 the seventh, 5 the eighth, 6 the ninth, 1 the tenth, and 2 the eleventh or more; there were 2 still-births, 1 illegitimate child, and 1 pair of twins; 75 were born in cities and towns of 500 to 5,000 population, and 135 in towns of less than 500 population, and in the country; 21 mothers were between 16 and 20 years of age, 24 fathers and 51 mothers between 21 and 25, 43 fathers and 38 mothers between 25 and 30, 44 fathers and 34 mothers between 31 and 35, 30 fathers and 16 mothers between 36 and 40, 14 fathers and 10 mothers between 41 and 45, 3 mothers over 45, 15 fathers between 46 and 50, 3 fathers between 51 and 55, and 2 fathers over 55; 160 fathers and 177 mothers were of American nationality, 3 fathers and 3 mothers of British North-American, 8 fathers and 4 mothers of English, 6 fathers and 2 mothers of Irish, 1 father of Scotch, 23 fathers and 16 mothers of German, 3 fathers and 1 mother of Scandinavian, 1 father and 1 mother of Polish, 3 fathers and 2 mothers of French, and 1 mother of Swiss.

IN PRATT county, the total number of births returned is 95. Of these, 51 were males, and 44 females; 91 were white, and 4 colored; 29 were the first child of mothers, 25 the second, 7 the third, 19 the fourth, 4 the fifth, 2 the sixth, 1 the seventh, 3 the eighth, and 1 the ninth; there were 2 pairs of twins; 29 were born in cities and towns of 500 to 5,000 population, and 65 in towns of less than 500 population, and in the country; 1 mother was under 15 years of age, 16 between 16 and 20, 16 fathers and 26 mothers between 21 and 25, 29 fathers and 22 mothers between 26 and 30, 20 fathers and 13 mothers between 31 and 35, 13 fathers and 10 mothers between 36 and 40, 8 fathers and 1 mother between 41 and 45, 3 fathers between 46 and 50, and 2 fathers over 55; 91 fathers and 92 mothers were of American nationality, 2 fathers and 2 mothers of Irish, and 1 father of German.

IN RAWLINS county, the total number of births returned is 18. Of these, 8 were males, 9 females, and the sex of 1 not given; all were white; 4 were the first child of mothers, 2 the second, 5 the third, 4 the fourth, 1 the fifth, and 2 the tenth; all were born in towns of less than 500 population, and in the country; 2 mothers were between 16 and 20 years of age, 2 fathers and 3 mothers between 21 and 25, 8 fathers and 5 mothers between 26 and 30, 3 fathers and 3 mothers between 31 and 35, 1 father and 1 mother between 36 and 40, 3 fathers and 4 mothers between 41 and 45, and 1 father between 46 and 50; 17 fathers and 14 mothers were of American nationality, 1 mother of English, 1 father and 2 mothers of German, and 1 mother of Scandinavian.

IN ROOKS county, the total number of births returned is 48. Of these, 34 were males, and 24 females; all were white; 9 were the first child of mothers, 7 the second, 7 the third, 2 the fourth, 3 the fifth, 6 the sixth, 2 the seventh, 2 the eighth, 4 the ninth, 12 the tenth, and 3 the eleventh, or more; there were 2 twins; all were born in towns of less than 500 population, and in the country; 11 mothers were between 16 and 20 years of age, 6 fathers and 8 mothers between 21 and 25, 6 fathers and 7 mothers between 26 and 30, 11 fathers and 7 mothers between 31 and 35, 10 fathers and 10 mothers between 36 and 40, 6 fathers and 3 mothers between 41 and 45, 5 fathers between 46 and 50, and 1 father over 55; 38 fathers and 39 mothers were of American nationality, 3 fathers and 2 mothers of English, 2 fathers and 2 mothers of German, 1 father of Scandinavian, and 2 fathers and 2 mothers of French.

IN RUSSELL county, the total number of births returned is 40. Of these, 20 were males, and 20 females; 36 were white and 4 colored; 10 were the first child of mothers, 8 the second, 9 the third, 4 the fourth, 2 the fifth, 2 the seventh, 1 the eighth, 1 the ninth, and 3 the eleventh or more; there was 1 pair of twins, and 2 still-births; 8 mothers were between 16 and 20 years of age, 4 fathers and 7 mothers between 21 and 25, 11 fathers and 9 mothers between 26 and 30, 7 fathers and 6 mothers between 31 and 35, 5 fathers and 2 mothers between 36 and 40, 2 fathers and 4 mothers between 41 and 45, 4 fathers between 46 and 50, and 1 father over 55; 31 fathers and 33 mothers were of American nationality, 2 fathers of English, 1 father of German, and 1 father and 2 mothers of Scandinavian.

IN SCOTT county, the total number of births returned is 30. Of these, 10 were males, and 20 females; all were white; 13 were the first child of mothers, 6 the second, 7 the third, 1 the fourth, 6 the fifth, and 1 the sixth; there were 4 still-births; 15 were born in cities and towns of 500 to 5,000 population, and 15 in towns of less than 500 population, and in the country; 2 mothers were between 16 and 20 years of age, 3 fathers and 10 mothers between 21 and 25, 12 fathers and 9 mothers between 26 and 30, 12 fathers and 9 mothers between 31 and 35, and 3 fathers between 36 and 40; 26 fathers and 27 mothers were of American nationality, and 4 fathers and 3 mothers of German.

IN SEDGWICK county, the total number of births returned is 428. Of these, 220 were males, and 208 females; 81 were the first child of mothers, 115 the second, 80 the third; 41 the fourth, 43 the fifth, 39 the sixth, 17 the seventh, 11 the eighth, 3 the ninth, and 1 the tenth; there were 7 still-births, and 12 twins; 48 mothers were between 16 and 20 years of age, 11 fathers under 20, 105 fathers and 130 mothers between 21 and 25, 170 fathers and 86 mothers between 26 and 30, 67 fathers and 63 mothers between 31 and 35, 28 fathers and 0 mothers between 36 and 40, 26 fathers and 23 mothers between 41 and 45, 15 fathers between 46 and 50, 3 fathers between 51 and 55, and 1 father over 55; 363 fathers and 353 mothers were of American nationality, 6 fathers and 8 mothers of British North-American, 10 fathers and 13 mothers of English, 11 fathers and 9 mothers of Irish, 33 fathers and 39 mothers of German, 1 father of Polish, 2 fathers and 2 mothers of French, and 1 father and 3 mothers of Swiss.

IN SHAWNEE county, the total number of births returned is 372. Of these, 208 were males, 162 females, and the sex of 2 not given; 325 were white, and 47 colored; 111 were the first child of mothers, 91 the second, 45 the third, 34 the fourth, 15 the fifth, 12 the sixth, 10 the seventh, 15 the eighth, 3 the ninth, 7 the tenth, and 3 the eleventh or more; there were 2 twins; 310 were born in cities of over 5,000 population, 1 in city of 500 to 5,000 population, and 61 in towns of less than 500 population, and in the country; 3 mothers were under 15 years of age, 2 fathers were under 20, 45 mothers were between 16 and 20, 53 fathers and 117 mothers between 21 and 25, 111 fathers and 73 mothers between 26 and 30, 71 fathers and 56 mothers between 31 and 35, 48 fathers and 24 mothers between 36 and 40, 30 fathers and 3 mothers between 41 and 45, 4 fathers between 46 and 50, 2 fathers between 51 and 55, and 3 fathers over 60; 247 fathers and 257 mothers were of American nationality, 2 fathers and 15 mothers of British North-American, 18 fathers and 15 mothers of English, 7 fathers and 5 mothers of Irish, 4 fathers and 2 mothers of Scotch, 16 fathers and 7 mothers of German, 27 fathers and 25 mothers of Scandinavian, 1 father of Austrian, 1 mother of Swiss, 1 mother of Dutch, and the nationality of 46 fathers and 44 mothers not stated.

IN SHERMAN county, the total number of births returned is 88. Of these, 44 were males, 43 females, and the sex of 1 not given; all were white; 36 were the first child of mothers, 19 the second, 15 the third, 7 the fourth, 5 the fifth, 9 the sixth, and 1 the eleventh; there were 4 still-births; 37 were born in cities and towns of 500 to 5,000 population, and 57 in towns of less than 500 population, and in the country; 14 mothers were between 16 and 20 years of age, 10 fathers and 32 mothers between 21 and 25, 28 fathers and 22 mothers between 26 and 30, 27 fathers and 14 mothers between 31 and 35, 13 fathers and 2 mothers between 36 and 40, 4 fathers between 41 and 45, and 3 fathers between 46 and 50; 83 fathers and 83 mothers were of American nationality, 1 father of British North-American, 1 father of English, 1 mother of Irish, 1 mother of Scotch, 3 fathers and 2 mothers of German, and 1 mother of Scandinavian.

IN STANTON county, the total number of births returned is 8. Of these, 2 were males, and 6 females; all were white; 3 were the first child of mothers, 2 the second, 1 the fourth, 1 the sixth, and 1 the seventh; 2 mothers were between 16 and 20 years of age, 1 mother between 21 and 25, 3 fathers and 2 mothers between 26 and 30, 1 father and 1 mother between 31 and 35, 1 father between 36 and 40, and the ages of 3 fathers and 3 mothers not given; all were of American nationality.

IN STEVENS county, the total number of births returned is 15. Of these, 10 were males, and 5 females; all were white; 7 were the first child of mothers, 1 the second, 3 the third, 1 the fourth, 1 the fifth, and 2 the eighth; 1 mother was between 21 and 25 years of age, 7 fathers and 3 mothers between 26 and 30, 1 father and 6 mothers between 31 and 35, 5 fathers and 1 mother between 36 and 40, and 1 father and 1 mother between 41 and 45; 14 fathers and 14 mothers were of American nationality, and 1 father and 1 mother of Scandinavian.

IN THOMAS county, the total number of births returned is 79. Of these, 41 were males, and 38 females; all were white; 23 were the first child of mothers, 19 the second, 16 the third, 1 the fourth, 5 the fifth, 4 the sixth, 4 the seventh, 1 the eighth, 1 the ninth, 2 the tenth, and 3 the eleventh or more; 23 were born in towns and cities under 5,000 and over 500 population, and 56 in towns of less than 500 population, and in the country; 6 mothers were between 16 and 20 years of age, 9 fathers and 30 mothers between 21 and 25, 27 fathers and 13 mothers between 26 and 30, 20 fathers and 20 mothers between 31 and 35, 9 fathers and 6 mothers between 36 and 40, 4 fathers and 1 mother between 41 and 45, 1 mother over 45, 6 fathers between 46 and 50, and 1 father over 55; there were 3 still-births; 64 fathers and 69 mothers were of American nationality, 3 fathers and 1 mother of British North-American, 4 fathers and 1 mother of English, 1 mother of Irish, 1 father of Scotch, 3 fathers and 3 mothers of German, 2 fathers and 2 mothers of Scandinavian, and 2 fathers and 2 mothers of Austrian.

IN WABAUNSEE county, the total number of births returned is 103. Of these, 57 were males, and 46 females; 97 were white, and 6 colored; 36 were the first child of mothers, 18 the second, 15 the third, 9 the fourth, 12 the fifth, 2 the sixth, 5 the seventh, 3 the eighth, 1 the ninth, and 2 the eleventh or more; there were 3 still-births; 26 were born in cities and towns of 500 to 5,000 population, and 77 in towns of less than 500 population, and in the country; 20 mothers were between 16 and 20 years of age, 14 fathers and 31 mothers between 21 and 25, 31 fathers and 19 mothers between 26 and 30, 20 fathers and 17 mothers between 31 and 35, 16 fathers and 9 mothers between 36 and 40, 12 fathers and 3 mothers between 41 and 45, 4 fathers

between 46 and 50, and 1 father over 55; 76 fathers and 87 mothers were of American nationality, 1 father and 1 mother of British North-American, 3 fathers and 1 mother of English, 1 father and 1 mother of Irish, 1 mother of Scotch, 19 fathers and 9 mothers of German, and 1 mother of Austrian.

In WICHITA county, the total number of births reported is 76. Of these, 28 were males and 48 females; all were white; 22 were the first child of mothers, 18 the second, 16 the third, 8 the fourth, 6 the fifth, 3 the sixth, 2 the seventh, and 1 the eighth; 48 were born in cities and towns of 500 to 5,000 population, and 28 in towns of less than 500 population, and in the country; 26 mothers were between 16 and 20 years of age, 21 fathers and 28 mothers between 21 and 25, 29 fathers and 8 mothers between 26 and 30, 11 fathers and 8 mothers between 31 and 35, 13 fathers and 3 mothers between 36 and 40, 2 fathers and 3 mothers between 41 and 45, and 1 mother over 45; all were of American nationality.

In WILSON county, the total number of births returned is 162. Of these, 80 were males, 79 females, and the sex of 2 not given; all were white; 35 were the first child of mothers, 33 the second, 30 the third, 14 the fourth, 15 the fifth, 12 the sixth, 8 the seventh, 10 the eighth, 1 the ninth, 1 the tenth, and 2 the eleventh or more; there was 1 pair of twins; 45 were born in cities and towns of 500 to 5,000 population, and 117 in towns of less than 500 population, and in the country; 2 fathers were under 20 years of age, 25 mothers between 16 and 20, 17 fathers and 36 mothers between 21 and 25, 49 fathers and 48 mothers between 26 and 30, 31 fathers and 24 mothers between 31 and 35, 29 fathers and 16 mothers between 36 and 40, 13 fathers and 6 mothers between 41 and 45, 6 fathers between 46 and 50, 5 fathers between 51 and 55, and 2 fathers over 55; 155 fathers and 160 mothers were of American nationality, 1 mother of English, 2 fathers of Irish, 1 father and 1 mother of Scotch, and 2 fathers of German.

In WOODSON county, the total number of births returned is 69. Of these, 31 were males, and 38 females; all were white; 13 were the first child of mothers, 15 the second, 17 the third, 10 the fourth, 6 the fifth, 1 the seventh, 2 the eighth, 2 the ninth, and 2 the eleventh or more; there were 5 still-births and 2 twins; 37 were born in cities and towns of 500 to 5,000 population, and 32 in towns of less than 500 population, and in the country; 13 mothers were between 16 and 20 years of age, 5 fathers and 19 mothers between 21 and 25, 28 fathers and 19 mothers between 26 and 30, 17 fathers and 9 mothers between 31 and 35, 7 fathers and 5 mothers between 36 and 40, 6 fathers and 2 mothers between 41 and 45, 3 fathers between 46 and 50, and 1 father over 55; 58 fathers and 62 mothers were of American nationality, 2 fathers and 1 mother of British North-American, 5 fathers and 3 mothers of German, and 2 fathers of Swiss.

In WYANDOTTE county, there were 2 births returned.

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#### DEATHS.

In ANDERSON county, the total number of deaths returned is 40. Of these, 31 were males and 9 females; all were white. The number dying from contagious diseases were as follows: 3 males and 2 females from measles, 2 males from scarlet fever, 15 males and 5 females from diphtheria, 3 males from enteric fever, and 8 males and 2 females from cholera infantum.



In **ATOHISON** county, the total number of deaths returned is 282. Of these, 128 were males, and 110 females, and the sex of 44 not given; 154 died in cities of over 5,000 population, and 39 in towns or villages under 500 population, or in the country; 66 were under 1 year of age, 28 between 1 and 5, 9 between 5 and 10, 4 between 10 and 15, 12 between 15 and 20, 25 between 20 and 30, 18 between 30 and 40, 21 between 40 and 50, 17 between 50 and 60, 36 between 60 and 70, 26 between 70 and 80, 8 between 80 and 90, and 1 over 90; of the number, 40 died in the month of January, 25 in February, 14 in March, 22 in April, 21 in May, 21 in June, 19 in July, 23 in August, 24 in September, 23 in October, 29 in November, and 18 in December. The number dying from contagious diseases is as follows: 1 male from measles, 2 males from influenza, 2 males and 1 female from enteric fever, 1 male from cerebro spinal fever, 2 males and 1 female from diphtheria, and 10 males, 2 females, and 4 whose sex is not stated, from cholera infantum.

In **BUTLER** county, the total number of deaths returned is 31. Of this number, 17 were males, and 14 were females; all were white; of their nativity, 7 were born in Kansas, 22 in other portions of the United States, and 2 were foreign-born; 20 were single, 2 married, and 2 widows; 6 were under 1 year of age, 4 between 1 and 5, 3 between 5 and 10, 3 between 10 and 15, 2 between 15 and 20, 3 between 20 and 30, 3 between 30 and 40, 1 between 50 and 60, 2 between 70 and 80, and 4 between 80 and 90; of the number, 4 died in the month of January, 3 in February, 6 in March, 3 in April, 1 in May, 3 in June, 4 in July, 2 in August, 1 in September, 3 in October, and 1 in November. The number dying from contagious diseases is as follows: 1 female from measles, 2 males and 3 females from typhoid fever, and 2 males from diphtheria.

In **CHASE** county, the total number of deaths returned is 9. Of this number, 4 were males, and 5 were females; all were white; of their nativity, 3 were born in Kansas, 5 in other portions of the United States, and 1 was foreign-born; 4 were single, 2 married, 1 a widower, and 1 a widow; all died in towns or villages under 500 population, or in the country; 2 were under 1 year of age, 3 between 1 and 5, 1 between 20 and 30, 3 between 30 and 40, 1 between 50 and 60, and 1 between 60 and 70; of the number, 1 died in the month of January, 1 in April, 1 in May, 1 in June, 1 in September, 1 in October, 2 in November, and 1 in December; 1 male died from measles, and 1 female from whooping-cough.

In **CHEYENNE** county, the total number of deaths returned is 13. Of these, 9 were males, and 4 females; all were white; all were born in Kansas; 10 were single, and 3 married; all died in towns and villages under 500 population, or in the country; 1 was under 1 year of age, 7 between 1 and 5, 1 between 20 and 30, and 1 between 40 and 50; 1 died in the month of May, 1 in July, 2 in August, 2 in September, and 1 in October; 1 male died of typhus fever, and 1 male and 2 females of cholera infantum.

In **CLAY** county, the total number of deaths returned is 147. Of these, 46 were males, 53 females, and the sex of 43 not stated; 24 were white, 5 colored, and the color of 118 not stated; of their nativity, 4 were born in Kansas, 11 in other portions of the United States, 4 were foreign-born, and the nativity of 128 not stated; 10 were single, 8 married, and the social condition of 129 not stated; 39 died in towns under 5,000 and over 500 population, and 108 in towns and villages under 500 population, or in the country; 30 were under 1 year of age, 15 between 1 and 5, 16 between 5 and 10, 7 between 10 and 15, 8 between 15 and 20, 11 between 20 and 30, 7

between 30 and 40, 8 between 40 and 50, 22 between 50 and 60, 6 between 60 and 70, 10 between 70 and 80, 5 between 80 and 90, and 1 over 90; of this number, 19 died in the month of January, 9 in February, 15 in March, 14 in April, 7 in May, 9 in June, 16 in July, 16 in August, 10 in September, 17 in October, 4 in November, and 11 in December. The number dying from contagious diseases is as follows: 12 males and 9 females from diphtheria, 1 male and 10 females from cerebro-spinal fever, 1 from whooping-cough, 1 from enteric fever, and 3 from cholera infantum.

In CRAWFORD county, the total number of deaths returned is 196. Of these, 90 were males, 62 females, and the sex of 44 not stated; 157 were white, 1 colored, and the color of 38 not stated; 92 were single, 13 married, and the social condition of 91 not stated; 35 died in cities or towns over 5,000 population, 46 in towns under 5,000 and over 500 population, and 113 in towns or villages under 500 population, or in the country; 50 were under 1 year of age, 43 between 1 and 5, 7 between 5 and 10, 3 between 10 and 15, 8 between 15 and 20, 11 between 20 and 30, 11 between 30 and 40, 15 between 40 and 50, 5 between 50 and 60, 15 between 60 and 70, 12 between 70 and 80, and 2 between 80 and 90; of the number, 18 died in the month of January, 9 in February, 11 in March, 19 in April, 23 in May, 19 in June, 42 in July, 26 in August, 24 in September, 2 in October, and 1 in December. The number dying from contagious diseases is as follows: 1 male and 1 female from measles, 9 males and 2 females from typhus fever, 2 males and 3 females from scarlet fever, 2 females and 1 male from diphtheria, 2 males and 1 female from cerebro-spinal fever, 2 females from whooping-cough, 2 males from continued fever, and 4 males and 4 females from cholera infantum.

In DECATUR county, the total number of deaths returned is 11. Of this number, 6 were males, and 5 females; all were white; of their nativity, 4 were born in Kansas, 6 in other portions of the United States, and 1 was foreign-born; 6 were single, 4 married, and 1 a widower; 2 died in towns under 5,000 and over 500 population, and 9 in towns or villages under 500 population, or in the country; 4 were under 1 year of age, 1 between 15 and 20, 4 between 30 and 40, and 1 between 60 and 70; of the number, 1 died in the month of January, 2 in March, 2 in May, 1 in June, 1 in July, 1 in September, 2 in November, and 1 in December; 1 male died from whooping-cough, and 1 female from cerebro-spinal fever.

In DONIPHAN county, the total number of deaths returned is 18. Of this number, 16 were males, and 2 females; 16 were white, and 2 colored; of their nativity, 7 were born in Kansas, 8 in other portions of the United States, and 3 were foreign-born; 9 were single, and 9 married; 13 died in towns under 5,000 and over 500 population, and 5 in the country; 8 were between 1 and 5 years of age, 2 between 20 and 30, 1 between 40 and 50, 4 between 50 and 60, 1 between 60 and 70, 1 between 70 and 80, and 1 between 80 and 90; of the number, 2 died in the month of January, 3 in March, 2 in April, 3 in May, 4 in June, 2 in July, 1 in August, and 1 in November; 4 males died of diphtheria.

In ELLIS county, the total number of deaths returned is 9. Of these, 1 was a male, and 8 females; all were white; of their nativity, 1 was born in Kansas, 5 in other portions of the United States, and 2 were foreign-born; 4 were single, and 5 married; all died in towns or villages under 500 population, or in the country; 1 was under 1 year of age, 1 between 5 and 10, 2 between 15 and 20, 1 between 20 and 30, 3 between 30 and 40, and 1 between 40 and 50; of the number, 1 died in the month of February, 2 in March, 1 in April, 1 in August, 3 in October, and 1 in November.

In ELLSWORTH county, the total number of deaths returned is 74. Of these, 36 were males, and 38 females; 71 were white, and 3 colored; of their nativity, 26 were born in Kansas, 30 in other portions of the United States, and 17 were foreign-born; 42 were single, 21 married, 2 widowers and 4 widows; 25 died in towns under 5,000 and over 500 population, and 49 in towns and villages under 500 population, or in the country; 18 were under 1 year of age, 8 between 1 and 5, 6 between 5 and 10, 1 between 10 and 15, 5 between 15 and 20, 6 between 20 and 30, 7 between 30 and 40, 5 between 40 and 50, 5 between 50 and 60, 7 between 60 and 70, 5 between 70 and 80, and 1 between 80 and 90; of the number, 4 died in the month of January, 8 in February, 6 in March, 8 in April, 5 in May, 9 in June, 5 in July, 9 in August, 3 in September, 5 in October, 7 in November, and 5 in December. The number dying from contagious diseases, as is follows: 1 male and 3 females from enteric fever, and 3 males and 3 females from cholera infantum.

In FORD county, the total number of deaths returned is 59. Of these, 36 were males, and 23 females; all were white; of their nativity, 14 were born in Kansas, 35 in other portions of the United States, and 4 were foreign-born; 28 were single, 18 married, 5 widowers, and 2 widows; 23 died in towns under 5,000 and over 500 population, and 26 in towns under 500 population, or in the country; 10 were under 1 year of age, 9 between 1 and 5, 2 between 5 and 10, 4 between 15 and 20, 11 between 20 and 30, 8 between 30 and 40, 5 between 40 and 50, 4 between 50 and 60, 4 between 60 and 70, and 2 between 70 and 80; of the number, 6 died in the month of January, 6 in February, 8 in March, 2 in April, 7 in May, 4 in July, 7 in August, 5 in September, 4 in October, 6 in November, and 4 in December; 1 male died from measles, 1 female from diphtheria, 3 males and 5 females from cerebro-spinal fever, 1 male from whooping-cough, and 1 male and 1 female from cholera infantum.

In FINNEY county, the total number of deaths returned is 22. Of this number, 11 were males, and 11 females; 21 were white, and 1 colored; of their nativity, 6 were born in Kansas, 13 in other portions of the United States, and 1 was foreign-born; 12 were single, 8 married, and 2 widowers; 14 died in towns under 5,000 and over 500 population, and 5 in towns or villages under 500 population, or in the country; 4 were under 1 year of age, 5 between 1 and 5, 1 between 5 and 10, 2 between 15 and 20, 1 between 20 and 30, 5 between 30 and 40, 1 between 40 and 50, 2 between 50 and 60, and 1 between 70 and 80; of the number, 1 died in the month of March, 2 in April, 1 in May, 3 in July, 2 in August, 2 in September, 2 in October, 2 in November, and 5 in December. The number dying from contagious diseases is as follows: 1 female from chicken-pox, 1 male and 1 female from scarlet fever, 1 female from cerebro-spinal fever, 1 male from enteric fever, and 2 males and 1 female from cholera infantum.

In FRANKLIN county, the total number of deaths returned is 33. Of these, 15 were males, and 18 females; 32 were white, and 1 colored; of their nativity, 12 were born in Kansas, 18 in other portions of the United States, and 3 were foreign-born; 17 were single, 10 married, 2 widowers, and 4 widows; 6 were under 1 year of age, 6 between 1 and 5, 1 between 5 and 10, 1 between 10 and 15, 2 between 15 and 20, 3 between 20 and 30, 3 between 40 and 50, 5 between 50 and 60, 2 between 60 and 70, and 4 between 70 and 80; of the number, 4 died in the month of January, 2 in February, 2 in March, 3 in April, 4 in May, 2 in June, 5 in July, 3 in August, 4 in September, 1 in October, and 3 in November. The number dying from contagious diseases is as follows: 1 male from scarlet fever, 1 male and 1 female from diphtheria, and 2 males and 1 female from enteric fever.

In GARFIELD county, the total number of deaths returned is 5.

In GRAY county, the total number of deaths returned is 3. Of this number, 2 were females, and 1 male; all were white; of their nativity, 2 were born in Kansas, and 1 in New York; 2 were single, and 1 a widow; 2 were under 1 year of age, and 1 between 70 and 80; 1 died in the month of March, 1 in July; 1 died from cholera infantum.

In GEARY county, the total number of deaths returned is 122. Of this number, 68 were males, and 54 females; 17 were under 1 year of age, 18 between 1 and 5, 6 between 5 and 10, 3 between 10 and 15, 9 between 15 and 20, 14 between 20 and 30, 8 between 30 and 40, 4 between 40 and 50, 5 between 50 and 60, 3 between 60 and 70, 8 between 70 and 80, 1 between 80 and 90, and 1 over 90; of the number, 6 died in the month of January, 11 in February, 11 in March, 6 in April, 7 in May, 6 in June, 18 in July, 15 in August, 10 in September, 8 in October, 11 in November, and 4 in December. The number dying from contagious diseases is as follows: 1 female from measles, 1 male from scarlet fever, 2 males and 1 female from whooping-cough, 7 males and 6 females from enteric fever, and 6 males and 6 females from cholera infantum.

In GOVE county, there was one death returned.

In GRAHAM county, the total number of deaths returned is 12. Of these, 8 were males, and 4 females; all were white; of their nativity, 11 were born in the United States, and 1 was foreign-born; 4 were single and 7 married; 1 was under 1 year of age, 2 between 10 and 15, 1 between 15 and 20, 1 between 20 and 30, 1 between 30 and 40, 3 between 50 and 60, and 1 between 80 and 90; of the number, 2 died in the month of January, 2 in February, 1 in March, 1 in April, 4 in July, and 2 in November.

In GREELEY county, the total number of deaths returned is 19. Of these, 8 were males, 8 females, and the sex of 3 not given; all were white; of their nativity, 15 were born in Kansas, and 1 in some other portion of the United States; 13 were single and 3 married; all died in towns or villages under 500 population, or in the country; 5 were under 1 year of age, 4 between 1 and 5, 1 between 5 and 10, 1 between 15 and 20, 1 between 20 and 30, 3 between 30 and 40, and 1 between 40 and 50; of the number, 4 died in the month of July, 6 in August, 2 in September, 2 in October, 2 in November, and 2 in December. The number dying from contagious diseases was as follows: 1 male and 1 female from scarlet fever, 1 male and 1 female from diphtheria, 2 males and 1 female from continued fever, and 2 males and 3 females from cholera infantum.

In HODGEMAN county, the total number of deaths returned is 16. Of these, 7 were males, and 9 females; 13 were white, and 2 colored; of their nativity, 9 were born in Kansas, 4 in other portions of the United States, and 1 was foreign-born; 8 were single, and 6 married; 3 were under 1 year of age, 1 between 1 and 5, 3 between 5 and 10, 2 between 10 and 15, 2 between 20 and 30, 2 between 30 and 40, 1 between 40 and 50, 1 between 50 and 60, and 1 between 60 and 70; of the number, 1 died in the month of January, 3 in February, 2 in April, 1 in May, 1 in June, 3 in September, 1 in October, 3 in November, and 1 in December; 1 male and 2 females died from diphtheria, and 1 female from cholera infantum.

In JACKSON county, the total number of deaths returned is 2. Of these, 1 was a male, and 1 female; both were white, and both were born in Kansas; 1 was under 1



year of age, and the other between 1 and 5; 1 died in January, the other in December; 1 male died from whooping-cough.

In JEFFERSON county, the total number of deaths is 2. Of these, 2 were males, and white; of their nativity, one was born in Kansas, and 1 in Kentucky; 1 was single, the other a widower; 1 was between 20 and 30 years of age, and 1 over 90; both died in the month of March.

In JEWELL county, the total number of deaths returned is 89. Of these, 39 were males, 37 females, and the sex of sixteen not stated; 87 were white, and the color of 2 not stated; 26 were under 1 year of age, 10 between 1 and 5, 6 between 5 and 10, 2 between 10 and 15, 2 between 15 and 20, 4 between 20 and 30, 6 between 30 and 40, 8 between 40 and 50, 4 between 50 and 60, 7 between 60 and 70, 5 between 70 and 80, 4 between 80 and 90; of the number, 7 died in the month of January, 13 in February, 17 in March, 4 in April, 6 in May, 6 in June, 8 in July, 6 in August, 4 in September, 14 in October, 4 in November, and 4 in December. The number dying from contagious diseases is as follows: 2 from measles, 1 male and 1 female from diphtheria, 1 male from cerebro-spinal fever, 5 females from whooping-cough, 1 male and 3 females from enteric fever, and 1 male and 2 females from cholera infantum.

In JOHNSON county, the total number of deaths returned is 68. Of these, 34 were males, and 34 females; 62 were white, and 6 colored; of their nativity, 29 were born in Kansas, 34 in other portions of the United States, and 5 were foreign-born; 33 were single, 28 married, 4 widowers, and 2 widows; 29 died in towns under 5,000 and over 500 population, and 39 in towns or villages under 500 population, or in the country; 14 were under 1 year of age, 6 between 1 and 5, 3 between 5 and 10, 3 between 10 and 15, 3 between 15 and 20, 5 between 20 and 30, 6 between 30 and 40, 5 between 40 and 50, 9 between 50 and 60, 8 between 60 and 70, and 6 between 70 and 80; of the number, 7 died in the month of January, 11 in February, 4 in March, 5 in April, 6 in May, 5 in June, 10 in July, 7 in August, 7 in September, 4 in November, and 2 in December; the number dying of contagious diseases is as follows: 1 male from measles, 2 females from cerebro-spinal fever, 1 female from continued fever, 3 males and 1 female from enteric fever, and 2 males and 3 females from cholera infantum.

In KEARNY county, the total number of deaths returned is 6. Of these, 4 were males, and 2 females; all were white; of their nativity, 4 were born in Kansas, and 2 in other portions of the United States; 5 were single, and 1 married; 5 were under 1 year of age, and 1 was between 30 and 40; of the number, 1 died in the month of April, 1 in May, 1 in August, 1 in September, and 2 in December.

In KINGMAN county, the total number of deaths returned is 39. Of these, 22 were males, and 17 females; all were white; of their nativity, 14 were born in Kansas, 21 in other portions of the United States, and 4 were foreign-born; 20 were single, 18 married, and 1 a widower; 20 died in towns under 5,000 and over 500 population, and 19 in towns or villages under 500 population, or in the country; 10 were under 1 year of age, 4 between 1 and 5, 2 between 5 and 10, 1 between 10 and 15, 1 between 15 and 20, 4 between 20 and 30, 1 between 30 and 40, 3 between 40 and 50, 4 between 50 and 60, 7 between 60 and 70, 1 between 70 and 80, and 1 between 80 and 90; of the number, 4 died in the month of January, 3 in February, 3 in March, 5 in April, 4 in May, 3 in June, 1 in July, 7 in August, 1 in September, 4 in October, 2 in November, and 1 in December; 1 female died from cholera infantum.

In LABETTE county, the total number of deaths returned is 80. Of these, 36 were males, 40 females, and the sex of 4 not stated; 58 were white, 9 colored, and the color of 13 not stated; of their nativity, 29 were born in Kansas, 36 in other portions of the United States, and 2 were foreign-born; 41 were single, 23 married, 4 widowers, and 5 widows; 33 died in cities and towns under 5,000 and over 500 population, and 47 in towns or villages under 500 population, or in the country; 13 were under 1 year of age, 14 between 1 and 5, 8 between 5 and 10, 3 between 10 and 15, 6 between 15 and 20, 5 between 20 and 30, 6 between 30 and 40, 3 between 40 and 50, 3 between 50 and 60, 8 between 60 and 70, 6 between 70 and 80, and 2 between 80 and 90; of the number, 7 died in the month of January, 8 in February, 7 in March, 6 in April, 8 in May, 7 in June, 3 in July, 9 in August, 7 in September, 7 in October, 10 in November, and 1 in December. The number dying from contagious diseases is as follows: 1 female from measles, 2 males and 2 females from cerebro-spinal fever, 1 female from whooping-cough, 3 males from continued fever, 2 males and 3 females from enteric fever, and 1 male from cholera infantum.

In LANE county, the total number of deaths returned is 18. Of these, 6 were males, 10 females, and the sex of 2 not stated; all were white; of their nativity, 8 were born in Kansas, 7 in other portions of the United States, and 1 was foreign-born; 10 were single, and 6 married; all died in towns or villages under 500 population, or in the country; 5 were under 1 year of age, 3 between 1 and 5, 2 between 15 and 20, 1 between 20 and 30, 4 between 50 and 60, and 2 between 70 and 80; of this number, 3 died in January, 4 in February, 4 in March, 2 in April, 1 in August, 1 in September, 1 in October, and 1 in November.

In LEAVENWORTH county, the total number of deaths returned is 17. Of these, 13 were males, and 4 females; 14 were white, and 3 colored; of their nativity, 4 were born in Kansas, 11 in other portions of the United States, and 2 were foreign-born; 8 were single, 7 married, 1 widower, and 1 widow; 15 died in cities or towns over 5,000 population, and 2 in towns or villages under 500 population, or in the country; 3 were under 1 year of age, 1 between 1 and 5, 1 between 15 and 20, 3 between 20 and 30, 3 between 30 and 40, 4 between 40 and 50, 1 between 60 and 70, and 1 between 70 and 80; of this number, 6 died in January, 4 in March, 1 in May, 3 in July, 1 in August, 1 in October, and 1 in November; 1 male died from diphtheria, and 1 female from continued fever.

In LINCOLN county, the total number of deaths returned is 22. Of these, 14 were males, and 8 females; all were white; of their nativity, 8 were born in Kansas, 8 in other portions of the United States, and 5 were foreign-born; 13 were single, 8 married, and 1 a widower; 5 died in towns under 5,000 and over 500 population, and 17 in towns or villages under 500 population, or in the country; 1 was under 1 year of age, 6 between 1 and 5, 1 between 10 and 15, 2 between 15 and 20, 2 between 20 and 30, 2 between 30 and 40, 3 between 40 and 50, 1 between 60 and 70, 2 between 70 and 80, and 1 between 80 and 90; of the number, 4 died in the month of January, 1 in February, 4 in March, 3 in June, 2 in July, 2 in August, 2 in September, 1 in October, 2 in November, and 2 in December. The number dying from contagious diseases was as follows: 1 male from scarlet fever, 1 female from continued fever, and 1 male from cholera infantum.

In LINN county, the total number of deaths returned is 52. Of this number, 28 were males, and 24 females; 46 were white, 2 colored, and the color of 4 not stated; of their nativity, 18 were born in Kansas, 27 in other portions of the United States,

and 3 were foreign-born; 20 were single, 21 married, 2 widowers, and 4 widows; 19 died in towns under 5,000 and over 500 population, and 33 in towns or villages under 500 population, or in the country; 7 were under 1 year of age, 7 between 1 and 5, 1 between 5 and 10, 1 between 10 and 15, 2 between 15 and 20, 3 between 20 and 30, 6 between 30 and 40, 4 between 40 and 50, 6 between 50 and 60, 7 between 60 and 70, 3 between 70 and 80, and 2 between 80 and 90; of the number, 5 died in the month of January, 4 in February, 12 in March, 2 in April, 2 in May, 7 in June, 11 in July, 6 in August, 2 in September, and 1 in October. The number dying from contagious diseases was as follows: 2 males and 1 female from diphtheria, 1 male from whooping-cough, 1 male from continued fever, 2 males from enteric fever, and 2 males and 4 females from cholera infantum.

In LEXINGTON county, the total number of deaths returned is 6. Of these, 4 were males, and 2 females; all were white; of their nativity, 2 were born in Kansas, 2 in other portions of the United States, and 1 was foreign-born; 3 were single, and 1 married; 2 died in cities over 5,000 population, and 4 in towns or villages under 500 population, or in the country; 1 was between 1 and 5 years of age, 1 between 5 and 10, and 2 between 50 and 60; of the number, 1 died in the month of February, 1 in March, 1 in April, 1 in May, 1 in June, and 1 in September. The number dying from contagious diseases was as follows: 1 female from small-pox, and 1 male from whooping-cough.

In MARION county, the total number of deaths returned is 84. Of these, 43 were males, and 41 females; all were white; of their nativity, 38 were born in Kansas, 25 in other portions of the United States, and the nativity of 21 not given; 41 were single, 15 married, and 2 widows; 52 died in towns under 5,000 and over 500 population, and 32 in towns or villages under 500 population, or in the country; 33 were under 1 year of age, 9 between 1 and 5, 2 between 5 and 10, 2 between 10 and 15, 2 between 15 and 20, 7 between 20 and 30, 8 between 30 and 40, 8 between 40 and 50, 4 between 50 and 60, 3 between 60 and 70, 5 between 70 and 80, and 1 between 80 and 90; of the number, 9 died in the month of January, 8 in February, 10 in March, 1 in April, 6 in May, 3 in June, 5 in July, 5 in August, 10 in September, 4 in October, 11 in November, and 10 in December. The number dying from contagious diseases is as follows: 1 female from measles, 1 male and 2 females from diphtheria, 1 female from whooping-cough, 1 female from continued fever, and 1 male from cholera infantum.

In MARSHALL county, the total number of deaths returned is 90. Of these, 58 were males, 30 females, and the sex of 2 not stated; 88 were white, and the color of 2 not stated; of their nativity, 46 were born in Kansas, 39 in other portions of the United States, and 3 were foreign-born; 48 were single, 36 married, 4 widowers, and 1 widow; 10 died in towns under 5,000 and over 500 population, and 66 in towns or villages under 500 population, or in the country; 21 were under 1 year of age, 7 between 1 and 5, 7 between 5 and 10, 6 between 10 and 15, 2 between 15 and 20, 4 between 20 and 30, 5 between 30 and 40, 3 between 40 and 50, 6 between 50 and 60, 7 between 60 and 70, 12 between 70 and 80, and 3 between 80 and 90; of the number, 2 died in the month of January, 2 in February, 1 in March, 1 in April, 3 in May, 6 in June, 14 in July, 12 in August, 14 in September, 9 in October, 9 in November, and 7 in December. The number dying from contagious diseases was as follows: 3 males and 1 female of diphtheria, 1 female from cerebro-spinal fever, 1 male and 3 females from whooping-cough, 2 males and 3 females from enteric fever, 8 males and 6 females from cholera infantum.

IN McPHERSON county, the total number of deaths returned is 176. Of these, 87 were males, 78 females, and the sex of 11 not stated; 32 were under 1 year of age, 23 between 1 and 5, 7 between 5 and 10, 6 between 10 and 15, 9 between 15 and 20, 16 between 20 and 30, 11 between 30 and 40, 19 between 40 and 50, 18 between 50 and 60, 11 between 60 and 70, 12 between 70 and 80, and 4 between 80 and 90; of the number, 6 died in the month of January, 9 in February, 7 in March, 11 in April, 15 in May, 10 in June, 18 in July, 29 in August, 16 in September, 13 in October, 22 in November, and 20 in December. The number dying from contagious diseases was as follows: 3 females from scarlet fever, 11 females from typhus fever, 9 females from diphtheria, 1 female from whooping-cough, and 7 females from cholera infantum.

IN MEADE county, the total number of deaths returned is 8. Of these, 3 were males, and 5 females; all were white; of their nativity, 2 were born in Kansas, and 6 in other portions of the United States; 5 were single, 2 married, and 1 a widower; 2 were between 1 and 5 years of age, 2 between 10 and 15, 1 between 15 and 20, and 3 between 30 and 40; of the number, 4 died in the month of June, 1 in July, 1 in September, and 2 in December; 1 female died from enteric fever.

IN MIAMI county, the total number of deaths returned is 161. Of these, 83 were males, 67 females, and the sex of 11 not stated; 143 were white, 7 colored, and the color of 11 not stated; of their nativity, 46 were born in Kansas, 73 in other portions of the United States, and 12 were foreign-born; 82 were single, 34 married, 8 widowers, and 1 a widow; 42 died in cities over 5,000 population, 58 in towns under 5,000 population, and 71 in towns or villages under 500 population, or in the country; 23 were under 1 year of age, 17 between 1 and 5, 15 between 5 and 10, 8 between 10 and 15, 11 between 15 and 20, 12 between 20 and 30, 19 between 30 and 40, 9 between 40 and 50, 7 between 50 and 60, 11 between 60 and 70, 7 between 70 and 80, 5 between 80 and 90, and 1 over 90; of the number, 14 died in the month of January, 18 in February, 17 in March, 16 in April, 17 in May, 9 in June, 12 in July, 8 in August, 12 in September, 10 in October, 17 in November, and 11 in December. The number dying from contagious diseases is as follows: 1 male and 6 females from scarlet fever, 2 males and 2 females from diphtheria, 3 males from cerebro-spinal fever, 2 males and 3 females from whooping-cough, 6 males and 3 females from enteric fever, and 6 males and 1 female from cholera infantum.

IN MONTGOMERY county, the total number of deaths returned is 40. Of these, 20 were males, and 20 females; 39 were white, and 1 colored; of their nativity, 19 were born in Kansas, 16 in other portions of the United States, and 4 were foreign-born; 23 were single, 11 married, 1 a widower, and 5 widows; 10 died in cities over 5,000 population, 11 in towns under 5,000 and over 500 population, and 17 in towns or villages under 500 population, or in the country; 9 were under 1 year of age, 5 between 1 and 5, 5 between 15 and 20, 6 between 20 and 30, 2 between 30 and 40, 2 between 40 and 50, 2 between 50 and 60, 1 between 60 and 70, 3 between 70 and 80, 1 between 80 and 90, and 1 over 90; of the number, 3 died in the month of January, 6 in February, 6 in March, 1 in May, 2 in June, 2 in July, 1 in August, 6 in September, 3 in October, 3 in November, and 2 in December; 1 female died from enteric fever, and 1 male and 2 females from cholera infantum.

IN NEMAHA county, the total number of deaths returned is 51. Of these, 26 were males, and 21 females; 50 were white, and 1 colored; of their nativity, 29 were born



in Kansas, 15 in other portions of the United States, and 6 were foreign-born; 31 were single, 14 married, 1 a widower, and 3 widows; 9 died in towns under 5,000 and over 500 population, and 42 in towns or villages under 500 population, or in the country; 13 were under 1 year of age, 12 between 1 and 5, 1 between 5 and 10, 2 between 10 and 15, 4 between 15 and 20, 2 between 20 and 30, 3 between 30 and 40, 2 between 40 and 50, 6 between 50 and 60, and 6 between 60 and 70; of the number, 9 died in the month of January, 5 in February, 6 in March, 6 in April, 1 in May, 2 in June, 4 in July, 6 in August, 3 in September, 4 in October, 2 in November, and 3 in December. The number dying from contagious diseases is as follows: 1 male from scarlet fever, 1 female from diphtheria, 1 male from enteric fever, 2 males and 1 female from cholera infantum.

In NEOSHO county, the total number of deaths returned is 2. Of these, 1 was a male, the other a female; both white; of their nativity, 1 was born in Ohio, and 1 in Indiana; both were married; both were between 30 and 40 years of age; one died in the month of March, and 1 in May.

In NESS county, the total number of deaths returned is 49. Of these, 28 were males, and 21 females; all were white; of their nativity, 46 were born in Kansas, and the nativity of 3 not given; 37 were married and 6 single; 11 were under 1 year of age, 17 between 1 and 5, 2 between 5 and 10, 1 between 10 and 15, 4 between 15 and 20, 1 between 20 and 30, 5 between 30 and 40, 1 between 50 and 60, and 1 between 70 and 80; of the number, 4 died in the month of January, 7 in February, 3 in March, 7 in April, 8 in May, 2 in June, 6 in July, 2 in August, 1 in October, 3 in November, and 3 in December. The number dying from contagious diseases is as follows: 1 male from measles, 6 males and 12 females from scarlet fever, 2 females from diphtheria, 1 female from cerebro-spinal fever, and 3 males from cholera infantum.

In NORTON county, the total number of deaths returned is 28. Of these, 10 were males, 15 females, and the sex of 3 not stated; all were white; of their nativity, 11 were born in Kansas, 11 in other parts of the United States, and 2 were foreign-born; 16 were single, 10 married, and 1 a widow; 9 died in towns under 5,000 and over 500 population, and 18 in towns or villages under 500 population, or in the country; 10 were under 1 year of age, 2 between 1 and 5, 2 between 10 and 15, 2 between 20 and 30, 1 between 30 and 40, 4 between 40 and 50, 3 between 50 and 60, 2 between 60 and 70, and 1 between 70 and 80; of the number, 4 died in the month of January, 1 in February, 2 in March, 1 in April, 5 in May, 2 in June, 3 in July, 5 in August, 2 in October, 1 in November, and 2 in December. The number dying from contagious diseases is as follows: 1 male and 1 female from enteric fever, and 2 males and 3 females from cholera infantum.

In OSAGE county, the total number of deaths returned is 60. Of these, 26 were males, 30 females, and the sex of 4 not stated; 54 were white, 1 colored, and the color of 5 not stated; of their nationality, 29 were born in Kansas, 16 in other portions of the United States, and 13 were foreign-born; 37 were single, 20 married and 2 widows; 27 died in towns under 5,000 and over 500 population, and 33 in towns or villages under 500 population, or in the country; 10 were under 1 year of age, 13 between 1 and 5, 5 between 5 and 10, 4 between 10 and 15, 1 between 15 and 20, 4 between 20 and 30, 6 between 30 and 40, 7 between 40 and 50, 2 between 50 and 60, 4 between 60 and 70, 2 between 70 and 80, and 1 between 80 and 90; of the number, 9 died in the month of January, 3 in February, 3 in March, 9 in April, 2 in May, 6 in

June, 5 in July, 7 in September, 2 in October, 7 in November, and 7 in December. The number dying from contagious diseases is as follows: 3 males and 3 females from measles, 1 female from scarlet fever, 1 male from diphtheria, 2 males and 1 female from cerebro-spinal fever, 1 male from whooping-cough, 1 male from continued fever, 1 female from enteric fever, and 1 male and 4 females from cholera infantum.

In OSBORNE county, the total number of deaths returned is 96. Of these, 46 were males, 48 females, and the sex of 7 not stated; 94 were white, and 2 colored; of their nativity, 26 were born in Kansas, 46 in other portions of the United States, and 12 were foreign-born; 44 were single, 32 married, 5 widowers, and 5 widows; 22 died in towns under 5,000 and over 500 population, and 74 in towns or villages under 500 population, or in the country; 25 were under 1 year of age, 6 between 1 and 5, 2 between 5 and 10, 2 between 10 and 15, 5 between 15 and 20, 11 between 20 and 30, 4 between 30 and 40, 9 between 40 and 50, 11 between 50 and 60, 4 between 60 and 70, 12 between 70 and 80, and 5 between 80 and 90; of the number, 12 died in the month of January, 11 in February, 8 in March, 12 in April, 6 in May, 5 in June, 12 in July, 9 in August, 5 in September, 8 in October, 5 in November, and 3 in December. The number dying from contagious diseases is as follows: 2 males and 1 female from scarlet fever, 1 male from whooping-cough, 2 males and 2 females from enteric fever, and 1 male and 4 females from cholera infantum.

In PHILLIPS county, the total number of deaths returned is 87. Of these, 44 were males, 37 females, and the sex of 6 not stated; all were white; of their nativity, 42 were born in Kansas, 41 in other portions of the United States, and 4 were foreign-born; 47 were single, 19 married, 4 widowers, and 2 widows; 8 died in towns under 5,000 and over 500 population, and 79 in towns or villages under 500 population, or in the country; 22 were under 1 year of age, 10 between 1 and 5, 7 between 5 and 10, 3 between 10 and 15, 2 between 15 and 20, 6 between 20 and 30, 9 between 30 and 40, 14 between 40 and 50, 5 between 50 and 60, 6 between 60 and 70, 2 between 70 and 80, and 1 between 80 and 90; of the number, 12 died in the month of January, 12 in February, 6 in March, 9 in April, 9 in May, 5 in June, 10 in July, 4 in August, 7 in September, 3 in October, 4 in November, and 5 in December. The number dying from contagious diseases is as follows: 1 female from measles, 3 males and 1 female from scarlet fever, 2 males from diphtheria, 2 females from whooping-cough, 1 male and 2 females from enteric fever, and 2 males and 2 females from cholera infantum.

In POTTAWATOMIE county, the total number of deaths returned is 45. Of these, 27 were males, 17 females, and the sex of 1 not stated; all were white; of their nativity, 21 were born in Kansas, 14 in other portions of the United States, and 3 were foreign-born; 23 were single, 17 married, 1 a widower, and 1 a widow; 12 died in towns under 5,000 and over 500 population, and 33 in towns or villages under 500 population, or in the country; 9 were under 1 year of age, 8 between 1 and 5, 2 between 5 and 10, 1 between 10 and 15, 2 between 15 and 20, 7 between 20 and 30, 2 between 30 and 40, 3 between 40 and 50, 4 between 50 and 60, 1 between 60 and 70, 2 between 70 and 80, 2 between 80 and 90, and 1 over 90; of the number, 12 died in the month of January, 3 in February, 5 in March, 4 in April, 1 in May, 5 in June, 4 in July, 1 in August, 6 in September, 1 in October, 2 in November, and 1 in December; 1 male died from whooping-cough, and 2 males from cholera infantum.

In RAWLINS county, the total number of deaths returned is 20. Of these, 15 were males, and 5 females; all were white; of their nativity, 2 were born in Kansas, 12 in

other portions of the United States, and 4 were foreign-born; 8 were single, 5 married, 6 widowers, and 1 widow; all died in towns or villages under 500 population, or in the country; 1 was under 1 year of age, 2 between 1 and 5, 1 between 10 and 15, 3 between 15 and 20, 4 between 20 and 30, 3 between 30 and 40, 2 between 50 and 60, 2 between 60 and 70, and 1 between 70 and 80; of the number, 3 died in the month of April, 5 in May, 2 in July, 1 in August, 5 in September, 2 in October, and 1 in November; 3 males and 1 female died from enteric fever.

In SCOTT county, the total number of deaths returned is 13. Of these, 8 were males, 3 females, and the sex of 2 not stated; all were white; of their nativity, 9 were born in Kansas, and 3 in other portions of the United States; 9 were single, 3 married, and 1 a widow; 2 died in towns under 5,000 or over 500 population, and 8 in towns or villages under 500 population, or in the country; 6 were under 1 year of age, 2 between 1 and 5, 1 between 5 and 10, 1 between 10 and 15, 1 between 20 and 30, and 2 between 30 and 40; of the number, 2 died in the month of January, 2 in February, 2 in March, 2 in July, 1 in September, 2 in October, 1 in November, and 1 in December. The number dying from contagious diseases was as follows: 1 death from small-pox, and 1 male from enteric fever.

In SEDGWICK county, the total number of deaths returned is 48. Of these, 31 were males, and 17 females; of their nativity, 2 were born in Kansas, 24 in other portions of the United States, and three were foreign-born; 6 were single, 14 married, and 5 widowers; 11 were under 1 year of age, 8 between 1 and 5, 2 between 5 and 10, 1 between 10 and 15, 4 between 20 and 30, 6 between 30 and 40, 5 between 40 and 50, 5 between 50 and 60, 2 between 60 and 70, 3 between 70 and 80, and 2 between 80 and 90; of the number, 8 died in the month of January, 5 in February, 4 in March, 8 in April, 3 in May, 4 in June, 5 in July, 3 in August, 4 in September, 2 in October, and 3 in November; one female from varioloid, 1 male from measles, 3 males from scarlet fever, 1 male from diphtheria, 2 males and 2 females from cerebro-spinal fever, 1 male from enteric fever, and 2 males from cholera infantum.

In SHAWNEE county, the total number of deaths returned is 125. Of these, 56 were males, 67 females, and the sex of 2 not stated; 94 were white, 28 colored, and the color of 3 not stated; of their nativity, 43 were born in Kansas, 63 in other portions of the United States, and 14 were foreign-born; 64 were single, 43 married, 4 widowers, and 8 widows; 99 died in cities over 5,000 population, and 26 in towns or villages under 500 population, or in the country; 18 were under 1 year of age, 20 between 1 and 5, 1 between 5 and 10, 3 between 10 and 15, 5 between 15 and 20, 11 between 20 and 30, 17 between 30 and 40, 14 between 40 and 50, 4 between 50 and 60, 18 between 60 and 70, 7 between 70 and 80, and 1 over 90; of the number, 12 died in the month of January, 2 in February, 13 in March, 16 in April, 12 in May, 9 in June, 13 in July, 6 in August, 13 in September, 9 in October, 13 in November, and 7 in December. The number dying from contagious diseases was as follows: 4 males and 1 female from measles, 1 male and 1 female from scarlet fever, 2 males and 6 females from diphtheria, 1 male from cerebro-spinal fever, 1 female from whooping-cough, 2 females from continued fever, 1 female from enteric fever, and 3 males and 3 females from cholera infantum.

In SHERMAN county, the total number of deaths returned is 28. Of these, 21 were males, and 7 females; 27 were white, and 1 colored; of their nativity, 7 were born in Kansas, 20 in other portions of the United States, and 1 was foreign-born; 20 were single, 7 married, and 1 a widow; 10 died in towns under 5,000 and over 500 popula-

tion, and 18 in towns or villages under 500 population, or in the country; 7 were under 1 year of age, 1 between 1 and 5, 3 between 5 and 10, 2 between 15 and 20, 8 between 20 and 30, 2 between 30 and 40, 2 between 40 and 50, 1 between 50 and 60, and 2 between 80 and 90; of the number, 3 died in the month of January, 3 in February, 4 in March, 2 in April, 2 in June, 5 in July, 4 in August, 1 in September, and 4 in October; 1 male died from enteric fever, and 1 male from cholera infantum.

In STANTON county, there was 1 death returned; a female; white; single; an American; between 20 and 30 years of age; died in the month of November, of typhoid pneumonia.

In STEVENS county, the total number of deaths returned is 5. Of these, 3 were males, and 2 females; all were white; of their nativity, all were born in the United States; 4 were married; 2 were between 20 and 30 years of age, 1 between 30 and 40, and 1 between 40 and 50; of the number, 2 died in the month of June, 1 in August, 1 in September, and 1 in October.

In THOMAS county, the total number of deaths returned is 43. Of this number, 24 were males, and 19 females; all were white; of their nativity, 20 were born in Kansas, 16 in other portions of the United States, and 2 were foreign-born; 27 were single, 12 married, and 1 a widower; 2 died in towns under 5,000 and over 500 population, and 41 in towns or villages under 500 population, or in the country; 9 were under 1 year of age, 11 between 1 and 5, 1 between 5 and 10, 3 between 10 and 15, 1 between 15 and 20, 8 between 20 and 30, 3 between 40 and 50, 3 between 50 and 60, 1 between 60 and 70, and 2 between 70 and 80; of the number, 7 died in the month of January, 3 in February, 5 in March, 2 in April, 1 in May, 3 in June, 7 in July, 4 in August, 6 in September, 1 in October, 1 in November, and 3 in December. The number dying from contagious diseases was as follows: 1 male from scarlet fever, 1 male and 1 female from whooping-cough, 1 female from continued fever, 4 males from enteric fever, and 3 males and 1 female from cholera infantum.

In WABAUNSEE county, the total number of deaths returned is 105. Of these, 65 were males, 40 females; 94 were white, and 11 colored; of their nativity, 40 were born in Kansas, 53 in other portions of the United States, and 11 were foreign-born; 48 were single, 44 married, 7 widowers, and 3 widows; 40 died in towns under 5,000 and over 500 population, and 65 in towns or villages under 500 population, or in the country; 19 were under 1 year of age, 9 between 1 and 5, 8 between 5 and 10, 6 between 10 and 15, 6 between 15 and 20, 15 between 20 and 30, 15 between 30 and 40, 9 between 40 and 50, 9 between 50 and 60, 6 between 60 and 70, and 1 between 70 and 80; of the number, 11 died in the month of January, 6 in February, 6 in March, 10 in April, 1 in May, 9 in June, 7 in July, 8 in August, 10 in September, 12 in October, 16 in November, and 9 in December. The number dying from contagious diseases was as follows: 2 males and 1 female from measles, 1 female from scarlet fever, 2 males and 2 females from diphtheria, 1 female from cerebro-spinal fever, 6 males and 2 females from enteric fever, and 3 males and 2 females from cholera infantum.

In WILSON county, the total number of deaths returned is 53. Of this number, 31 were males, 21 females, and the sex of 1 not stated; all were white; of their nativity, 26 were born in Kansas, 24 in other portions of the United States, and 3 were foreign-born; 13 died in towns under 5,000 and over 500 population, and 40 in towns of less than 500 population, or in the country; 12 were under 1 year of age, 10 between 1 and 5, 2 between 5 and 10, 5 between 10 and 15, 4 between 15 and 20, 4 be-



tween 20 and 30, 5 between 30 and 40, 5 between 50 and 60, 3 between 60 and 70, 1 between 70 and 80, and 2 between 80 and 90; of the number, 3 died in the month of January, 12 in February, 9 in March, 3 in April, 4 in May, 4 in June, 5 in July, 3 in August, 2 in September, 3 in October, 4 in November, and 1 in December. The number dying from contagious diseases is as follows: 4 males and 4 females from measles, 1 male and 1 female from whooping-cough, 1 male and 1 female from enteric fever, and 2 males from cholera infantum.

IN WICHITA county, the total number of deaths returned is 9. Of this number, 5 were males, and 4 females; all were white; of their nativity, 8 were born in the United States, and 1 was foreign-born; 7 were single, 1 married, and 1 a widow; 2 died in towns under 5,000 population and over 500, and 7 in towns or villages under 500 population, or in the country; 3 were between 10 and 15 years of age, 4 between 15 and 20, 1 between 20 and 30, and 1 between 80 and 90; of the number, 1 died in the month of February, 1 in March, 3 in April, 2 in May, and 2 in October.

IN WOODSON county, the total number of deaths returned is 70. Of these, 35 were males, 32 females, and the sex of 3 not stated; all were white; of their nativity, 38 were born in Kansas, 21 in other portions of the United States, and 4 were foreign-born; 45 were single, 14 married, 2 widowers, and 6 widows; 36 died in towns under 5,000 and over 500 population, and 34 in towns or villages under 500 population, or in the country; 22 were under 1 year of age, 13 between 1 and 5, 4 between 5 and 10, 2 between 10 and 15, 2 between 15 and 20, 4 between 20 and 30, 5 between 30 and 40, 5 between 40 and 50, 5 between 50 and 60, 4 between 60 and 70, and 3 between 70 and 80; of the number, 3 died in the month of January, 10 in February, 5 in March, 6 in April, 2 in May, 3 in June, 12 in July, 11 in August, 4 in September, 6 in October, 5 in November, and 3 in December. The number dying from contagious diseases is as follows: 1 male from small-pox, 1 male from measles, 2 males and 4 females from scarlet fever, 1 male from diphtheria, 2 females from whooping-cough, 1 female from continued fever, 3 males and 1 female from enteric fever, and 7 males and 7 females from cholera infantum.

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#### MARRIAGES.

IN ANDERSON county, the total number of marriages returned is 115, 110 of whom were white, and 5 colored. Of the number, 4 grooms and 4 brides were under 20 years of age, 94 grooms and 94 brides between 20 and 25, 10 grooms and 10 brides between 25 and 30, and 7 grooms and 7 brides between 30 and 40.

IN BUTLER county, the total number of marriages returned is 29, all of whom were white. Of the number, 26 grooms and 29 brides were of American nationality, while 3 grooms were of foreign nationality; 10 brides were under 20 years of age, 12 grooms and 15 brides between 20 and 25, 10 grooms between 25 and 30, 6 grooms and 4 brides between 30 and 40, and 1 groom between 50 and 60.

IN CHASE county, the total number of marriages returned is 2, all of whom were white, and of American nationality; 1 groom and 1 bride were between 20 and 25 years of age, 1 bride between 25 and 30, and 1 groom between 50 and 60.

IN CHEYENNE county, the total number of marriages returned is 24, all of whom were white. Of the number, 22 grooms and 16 brides were of American nationality, while 1 groom and 3 brides were of foreign nationality; 1 groom and 5 brides were

under 20 years of age, 9 grooms and 13 brides between 20 and 25, 10 grooms and 1 bride between 25 and 30, 3 grooms between 30 and 40, and 1 groom between 50 and 60.

In CLAY county, the total number of marriages returned is 141, of whom 140 were white, and 1 colored. Of the number, 103 grooms and 109 brides were of American nationality, while 38 grooms and 32 brides were of foreign nationality; 43 brides were under 20 years of age, 30 grooms and 51 brides were between 20 and 25, 60 grooms and 21 brides between 25 and 30, 30 grooms and 12 brides between 30 and 40, 11 grooms and 11 brides between 40 and 50, 6 grooms and 3 brides between 50 and 60, and 2 grooms between 60 and 70.

In CLOUD county, the total number of marriages returned is 6, all of whom were white and of American nationality; 3 brides were under 20 years of age, 3 grooms and 1 bride between 20 and 25, 1 bride between 25 and 30, and 3 grooms and 1 bride between 30 and 40.

In COFFEY county, the total number of marriages returned is 119, 117 of whom were white and 2 colored. Of the number, 97 grooms and 98 brides were of American nationality, while 10 grooms and 9 brides were of foreign nationality; 41 brides were under 20 years of age, 33 grooms and 52 brides between 20 and 25, 46 grooms and 17 brides between 25 and 30, 23 grooms and 7 brides between 30 and 40, 9 grooms and 2 brides between 40 and 50, 3 grooms and 2 brides between 50 and 60, 3 grooms and 1 bride between 60 and 70.

In CRAWFORD county, the total number of marriages returned is 280, 276 of whom were white, 2 colored, and the color of 2 not given; 5 grooms and 105 brides were under 20 years of age, 126 grooms and 101 brides between 20 and 25, 70 grooms and 31 brides between 25 and 30, 55 grooms and 24 brides between 30 and 40, 14 grooms and 7 brides between 40 and 50, 9 grooms and 1 bride between 50 and 60, 1 groom and 2 brides between 60 and 70, 1 groom between 70 and 80.

In DECATUR county, the total number of marriages returned is 55, all of whom were white. Of the number, 47 grooms and 49 brides were of American nationality, while 8 grooms and 6 brides were of foreign nationality; 16 brides were under 20 years of age, 18 grooms and 26 brides between 20 and 25, 18 grooms and 8 brides between 25 and 30, 16 grooms and 3 brides between 30 and 40, and 5 grooms and 2 brides between 40 and 50.

In ELLIS county, the total number of marriages returned is 24, all of whom were white. Of the number, 7 grooms and 7 brides were of American nationality, while 17 grooms and 17 brides were of foreign nationality; 17 brides were under 20 years of age, 11 grooms and 5 brides between 20 and 25, 10 grooms and 2 brides between 25 and 30, 2 grooms between 30 and 40, and 1 groom between 40 and 50.

In ELLSWORTH county, the total number of marriages returned is 51, 48 of whom were white, and 3 colored; 38 grooms and 41 brides were of American nationality, while 13 grooms and 10 brides were of foreign nationality; 14 brides were under 20 years of age, 10 grooms and 19 brides between 20 and 25, 26 grooms and 14 brides between 25 and 30, 13 grooms and 2 brides between 30 and 40, 1 groom and 1 bride between 40 and 50, and 1 groom and 1 bride between 50 and 60.

In FINNEY county, the total number of marriages returned is 22, 21 of whom were white, and 1 colored; of the number, 19 grooms and 20 brides were of American na-

tionality, while 1 groom was of foreign nationality; 1 bride was under 20 years of age, 3 grooms and 5 brides between 20 and 25, 6 grooms and 6 brides between 25 and 30, 11 grooms and 2 brides between 30 and 40, and 1 groom and 1 bride between 40 and 50.

In FORD county, the total number of marriages returned is 57, 55 of whom were white, and 2 colored; 18 brides were under 20 years of age, 17 grooms and 25 brides between 20 and 25, 23 grooms and 9 brides between 25 and 30, 12 grooms and 2 brides between 30 and 40, 3 grooms and 2 brides between 40 and 50, 1 groom and 1 bride between 50 and 60, and 1 groom between 60 and 70.

In GARFIELD county, the total number of marriages returned is 11, all of whom were white. Of the number, 10 grooms and 11 brides were of American nationality, while 1 groom was of foreign nationality; 5 brides were under 20 years of age, 4 grooms and 3 brides between 20 and 25, 3 grooms and 1 bride between 25 and 30, 3 grooms between 30 and 40, and 1 groom and 1 bride between 50 and 60.

In GEARY county, the total number of marriages returned is 84. Of the number, 1 groom and 36 brides were under 20 years of age, 35 grooms and 33 brides between 20 and 25, 34 grooms and 8 brides between 25 and 30, 10 grooms and 4 brides between 30 and 40, 3 grooms and 3 brides between 40 and 50, and 1 groom between 60 and 70.

In GREELEY county, the total number of marriages returned is 10, all of whom were white and of American nationality; 1 groom and 4 brides were under 20 years of age, 3 grooms and 3 brides between 20 and 25, 4 grooms and 3 brides between 25 and 30, and 2 grooms between 30 and 40.

In JEWELL county, the total number of marriages returned is 105, all of whom were white. Of the number, 98 grooms and 102 brides were of American nationality, while 3 grooms and 1 bride were of foreign nationality; 1 groom and 48 brides were under 20 years of age, 55 grooms and 43 brides between 20 and 25, 28 grooms and 7 brides between 25 and 30, 15 grooms and 2 brides between 30 and 40, 3 grooms and 2 brides between 40 and 50, 1 groom between 60 and 60.

In JOHNSON county, the total number of marriages returned is 162. Of the number, 3 grooms and 46 brides were under 20 years of age, 57 grooms and 67 brides between 20 and 25, 41 grooms and 29 brides between 25 and 30, 23 grooms and 10 brides between 30 and 40, 8 grooms and 2 brides between 40 and 50, 5 grooms and 3 brides between 50 and 60, and 3 grooms and 3 brides between 60 and 70.

In KEARNEY county, the total number of marriages returned is 8, all of whom were white, and of American nationality; 4 brides were under 20 years of age, 4 brides between 20 and 25, 6 grooms between 25 and 30, and 2 grooms between 30 and 40.

In KINGMAN county, the total number of marriages returned is 88, 87 of whom were white, and 1 colored; 83 grooms and 81 brides were of American nationality, while 5 grooms and 7 brides were of foreign nationality; 7 grooms and 27 brides were under 20 years of age, 13 grooms and 33 brides between 20 and 25, 25 grooms and 9 brides between 25 and 30, 29 grooms and 10 brides between 30 and 40, 7 grooms between 40 and 50, 1 groom between 50 and 60, and 2 grooms between 60 and 70.

In LABETTE county, the total number of marriages returned is 181, 162 of whom were white, and 14 colored. Of the number, 169 grooms and 171 brides were of American nationality, while 8 grooms and 5 brides were of foreign nationality; 1

groom and 46 brides were under 20 years of age, 56 grooms and 84 brides between 20 and 25, 64 grooms and 29 brides between 25 and 30, 43 grooms and 15 brides between 30 and 40, 9 grooms and 5 brides between 40 and 50, 4 grooms and 1 bride between 50 and 60, and 4 grooms between 60 and 70.

In **LANE** county, the total number of marriages returned is 16, all of whom were white. Of the number, 15 grooms and 16 brides were of American nationality, while 1 groom was of foreign nationality; 5 brides were under 20 years of age, 3 grooms and 8 brides between 20 and 25, 7 grooms and 1 bride between 25 and 30, 5 grooms and 2 brides between 30 and 40, and 1 groom between 40 and 50.

In **LINN** county, the total number of marriages returned is 154, of whom 140 were white, and 9 colored. Of the number, 97 grooms and 99 brides were of American nationality, while 25 grooms and 18 brides were of foreign nationality; 2 grooms and 52 brides were under 20 years of age, 69 grooms and 71 brides between 20 and 25, 45 grooms and 16 brides between 25 and 30, 26 grooms and 10 brides between 30 and 40, 8 grooms and 4 brides between 40 and 50, and 3 grooms between 60 and 70.

In **MARION** county, the total number of marriages returned is 131, all of whom were white; 77 grooms and 83 brides were of American nationality, while 54 grooms and 48 brides were of foreign nationality; 41 brides were under 20 years of age, 41 grooms and 52 brides between 20 and 25, 66 grooms and 29 brides between 25 and 30, 15 grooms and 4 brides between 30 and 40, 6 grooms and 5 brides between 40 and 50, and 3 grooms between 50 and 60.

In **MARSHALL** county, the total number of marriages returned is 172, of whom 166 were white, and 6 colored. Of the number, 148 grooms and 144 brides were of American nationality, while 24 grooms and 28 brides were of foreign nationality; 48 brides were under 20 years of age, 77 grooms and 76 brides between 20 and 25, 56 grooms and 24 brides between 25 and 30, 30 grooms and 16 brides between 30 and 40, 6 grooms and 5 brides between 40 and 50, and 2 grooms between 50 and 60.

In **McPHERSON** county, the total number of marriages returned is 167, all of whom were white. Of the number, 107 grooms and 115 brides were of American nationality, while 60 grooms and 49 brides were of foreign nationality; 48 brides were under 20 years of age, 63 grooms and 75 brides between 20 and 25, 53 grooms and 23 brides between 25 and 30, 34 grooms and 14 brides between 30 and 40, 12 grooms and 2 brides between 40 and 50, 3 grooms and 2 brides between 50 and 60, and 2 grooms between 70 and 80.

In **MIAMI** county, the total number of marriages returned is 179, of whom 169 were white, and 8 colored. Of the number, 78 grooms and 79 brides were of American nationality, while 16 grooms and 14 brides were of foreign nationality; 1 groom and 58 brides were under 20 years of age, 59 grooms and 70 brides between 20 and 25, 53 grooms and 30 brides between 25 and 30, 48 grooms and 12 brides between 30 and 40, 7 grooms and 7 brides between 40 and 50, 7 grooms between 50 and 60, and 3 grooms between 60 and 70.

In **MEADE** county, the total number of marriages returned is 23, all of whom were of American nationality; 1 groom and 6 brides were under 20 years of age, 8 grooms and 8 brides between 20 and 25, 4 grooms and 4 brides between 25 and 30, 5 grooms and 4 brides between 30 and 40, 4 grooms and 1 bride between 40 and 50, and 1 groom between 50 and 60.

In **MONTGOMERY** county, the total number of marriages returned is 235, of whom 221 were white, and 14 colored; 206 grooms and 191 brides were of American nation-



ality, while 36 grooms and 24 brides were of foreign nationality; 5 grooms and 65 brides were under 20 years of age, 87 grooms and 108 brides between 20 and 25, 72 grooms and 22 brides between 25 and 30, 40 grooms and 15 brides between 30 and 40, 19 grooms and 6 brides between 40 and 50, 10 grooms and 7 brides between 50 and 60, and 2 grooms between 60 and 70.

In NEMAHA county, the total number of marriages returned is 127, of whom 125 were white, and 2 colored. Of the number, 96 grooms and 106 brides were of American nationality, while 29 grooms and 19 brides were of foreign nationality; 1 groom and 51 brides were under 20 years of age, 57 grooms and 41 brides between 20 and 25, 33 grooms and 12 brides between 25 and 30, 21 grooms and 7 brides between 30 and 40, 3 grooms and 4 brides between 40 and 50, 7 grooms and 4 brides between 50 and 60, and 2 grooms and 1 bride between 60 and 70.

In NESS county, the total number of marriages returned is 37, all of whom were white. Of the number, 32 grooms and 35 brides were of American nationality, while 5 grooms and 2 brides were of foreign nationality; 17 brides were under 20 years of age, 17 grooms and 14 brides between 20 and 25, 13 grooms and 2 brides between 25 and 30, 6 grooms and 2 brides between 30 and 40, 2 grooms between 40 and 50, and 1 groom between 50 and 60.

In NORTON county, the total number of marriages returned is 130, of whom 124 were white, and 5 colored; 56 grooms and 38 brides were of American nationality, while 6 grooms and 4 brides were of foreign nationality; 23 brides were under 20 years of age, 29 grooms and 23 brides between 20 and 25, 16 grooms and 10 brides between 25 and 30, 11 grooms and 3 brides between 30 and 40, 5 grooms and 1 bride between 40 and 50, 2 grooms and 2 brides between 50 and 60, and 1 groom and 1 bride between 70 and 80.

In OSAGE county, the total number of marriages returned is 4, all of whom were white; 3 grooms and 4 brides were of American nationality, while 1 groom was of foreign nationality; 4 brides were under 20 years of age, 1 groom between 25 and 30, and 3 grooms between 30 and 40.

In OSBORNE county, the total number of marriages returned is 90, of whom 89 were white, and 1 colored; 75 grooms and 79 brides were of American nationality, while 12 grooms and 6 brides were of foreign nationality; 1 groom and 27 brides were under 20 years of age, 39 grooms and 42 brides between 20 and 25, 24 grooms and 12 brides between 25 and 30, 20 grooms and 8 brides between 30 and 40, 4 grooms between 40 and 50, and 1 groom between 50 and 60.

In PHILLIPS county, the total number of marriages, returned is 113, of whom 112 were white, and 1 colored; 96 grooms and 100 brides were of American nationality, while 16 grooms and 13 brides were of foreign nationality; 49 brides were under 20 years of age, 36 grooms and 43 brides between 20 and 25, 45 grooms and 11 brides between 25 and 30, 19 grooms and 6 brides between 30 and 40, 9 grooms and 3 brides between 40 and 50, 2 grooms between 50 and 60, and 1 groom and 1 bride between 60 and 70.

In POTTAWATOMIE county, the total number of marriages returned is 104, of whom 102 were white, and 2 colored. Of the number, 78 grooms and 91 brides were of American nationality, while 26 grooms and 13 brides were of foreign nationality; 38 brides were under 20 years of age, 38 grooms and 47 brides between 20 and 25, 34 grooms and 12 brides between 25 and 30, 24 grooms and 5 brides between 30 and 40, 3 grooms and 1 bride between 40 and 50, 2 grooms and 1 bride between 50 and 60, and 2 grooms between 60 and 70.

In RAWLINS county, the total number of marriages returned is 16, all of whom were white; 11 grooms and 12 brides were of American nationality, while 2 grooms and 2 brides were of foreign nationality; 1 groom and 5 brides were under 20 years of age, 9 grooms and 6 brides between 20 and 25, 5 grooms and 5 brides between 25 and 30, and 2 grooms between 30 and 40.

In SCOTT county, the total number of marriages returned is 26, all of whom were white; 15 grooms and 20 brides were of American nationality, while 7 grooms and 2 brides were of foreign nationality; 1 groom and 8 brides were under 20 years of age, 3 grooms and 6 brides between 20 and 25, 15 grooms and 7 brides between 25 and 30, 7 grooms and 3 brides between 30 and 40, and 1 groom between 40 and 50.

In SEDGWICK county, the total number of marriages returned is 452. Of the number, 4 grooms and 199 brides were under 20 years of age, 160 grooms and 121 brides between 20 and 25, 161 grooms and 92 brides between 25 and 30, 76 grooms and 33 brides between 30 and 40, 31 grooms and 14 brides between 40 and 50, and 9 grooms and 3 brides between 50 and 60.

In SHERMAN county, the total number of marriages returned is 56, all of whom were white. Of the number, 47 grooms and 50 brides were of American nationality, while 9 grooms and 6 brides were of foreign nationality; 15 brides were under 20 years of age, 11 grooms and 21 brides between 20 and 25, 28 grooms and 11 brides between 25 and 30, 13 grooms and 7 brides between 30 and 40, 3 grooms and 2 brides between 40 and 50, and 1 groom between 50 and 60.

In STEVENS county, the total number of marriages returned is 18, all of whom were white; 7 grooms and 5 brides were of American nationality, while 3 grooms and 3 brides were of foreign nationality; 7 brides were under 20 years of age, 5 grooms and 4 brides between 20 and 25, 7 grooms and 3 brides between 25 and 30, 2 grooms and 2 brides between 30 and 40, and 2 grooms between 40 and 50.

In THOMAS county, the total number of marriages returned is 43, all of whom were white; 36 grooms and 38 brides were of American nationality; 7 grooms and 5 brides were of foreign nationality; 17 brides were under 20 years of age, 11 grooms and 18 brides between 20 and 25, 26 grooms and 7 brides between 25 and 30, 5 grooms and 1 bride between 30 and 40, and 1 groom between 60 and 70.

In WICHITA county, the total number of marriages returned is 41, all of whom were white, and of American nationality; 4 grooms and 4 brides were under 20 years of age, 14 grooms and 2 brides between 20 and 25, 4 grooms between 25 and 30, 10 grooms between 30 and 40, 3 grooms between 40 and 50, and 2 grooms between 50 and 60.

In WILSON county, the total number of marriages returned is 143, all of whom were white. Of the number, 139 grooms and 141 brides were of American nationality, while 4 grooms and 2 brides were of foreign nationality; 2 grooms and 40 brides were under 20 years of age, 48 grooms and 71 brides between 21 and 25, 49 grooms and 12 brides between 25 and 30, 28 grooms and 12 brides between 30 and 40, 7 grooms and 3 brides between 40 and 50, 2 grooms and 4 brides between 50 and 60, 4 grooms between 60 and 70, and 2 grooms between 70 and 80.

In WOODSON county, the total number of marriages returned is 74, all of whom were white; 64 grooms and 69 brides were of American nationality, while 10 grooms and 5 brides were of foreign nationality; 1 groom and 24 brides were under 20 years of age, 22 grooms and 32 brides between 20 and 25, 32 grooms and 8 brides between

25 and 30, 10 grooms and 3 brides between 30 and 40, 3 grooms and 3 brides between 40 and 50, 3 grooms and 2 brides between 50 and 60, and 1 groom between 60 and 70.

Below is a comparative statement, which will be of interest to anyone who will examine it, of a list of counties, and number of deaths in each, resulting from the ten diseases that are very dangerous to public health, and were reported to the Secretary of the State Board of Health by the county health officers, for the year 1888:

Counties.	Small-pox.....	Measles.....	Whooping-cough...	Scarlatina.....	Diphtheria.....	Dysentery.....	Typhoid fever.....	Peripneumonia.....	Cerebro-spinal fever.....	Cholera infantum.....
Atchison.....			17	2	39	2	7	11		17
Anderson.....							1		1	1
Clay.....	1	1	1	1	1	1	1		1	1
Cloud.....			1			1		1		
Comanche.....							2			
Crawford.....		5	6	7	5		13		6	22
Davis.....		1		8		6				12
Decatur.....				1		1	3		1	2
Doniphan.....							4		1	2
Elk.....						4	3		2	
Ellis.....										1
Ellsworth.....		1			2	2	2		1	5
Finney.....					3					1
Ford.....			2	1	1	1	3		2	14
Franklin.....					5			3		
Graham.....						7	12			5
Gray.....						1				1
Greenwood.....			1			3				12
Harvey.....	1				1	1	6			2
Hodgeman.....							2			1
Jefferson.....					7					15
Jewell.....			6	1	7	3	11		1	2
Johnson.....			1	1	1	1	10		1	5
Kiowa.....							1			
Kingman.....					1	1	4			2
Labette.....			4	2	4		10		7	4
Lane.....							2		1	2
Leavenworth.....				2		1	2			4
Lincoln.....			1				3		2	4
Linn.....			1	2	1	6	7	2	2	3
Lyon.....				10	1	1				2
Marion.....			2			1	1		2	3
Marshall.....			5		4	2	2		8	8
McPherson.....	7		1	1	11				3	1
Miami.....			2	5	3		2		1	4
Montgomery.....					2	1	7			15
Neumaha.....		1			3	4	5	2	1	2
Neosho.....							1			3
Norton.....			1					1		
Osage.....					4		3		1	2
Osborne.....		1	4		3	4	5		2	6
Pawnee.....					2	3	2	1		5
Phillips.....		10		7	5	1	7			7
Pottawatomie.....			1		3	1			1	5
Pratt.....	1					1	4			2
Rawlins.....						1	1	5		
Russell.....				1	4	1	1		1	1
Saline.....							4			3
Sedgwick.....	10		1	1	2	2	4		3	4
Shawnee.....			1	1			5	1	3	12
Sheridan.....			1						2	2
Sherman.....				1					2	10
Thomas.....					1	3	3			11
Wabawnee.....		1	2		9	3	6	3		7
Washington.....		1			2					3
Wichita.....							1			3
Wilson.....		1	2	2	1	5	7		3	7
Woodson.....							3			9
Totals.....	20	23	63	57	138	76	188	30	57	275

Below is the tabulated statement of deaths reported from the same counties for the year 1888, by months, from the four following diseases very dangerous to public health, viz.: Measles, scarlet fever, diphtheria, and typhoid fever:

## MEASLES.

<i>Counties.</i>	<i>January....</i>	<i>February ..</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September ..</i>	<i>October .....</i>	<i>November..</i>	<i>December ..</i>
Clay.....	.....	.....	.....	.....	2	.....	3	.....	.....	.....	.....	1
Crawford.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Davis.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....
Fillsworth.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nemaha.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Osborne.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....
Phillips.....	.....	.....	.....	2	4	2	.....	1	.....	.....	.....	.....
Wabauusee.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Wilson.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	.....	1	2	3	7	2	4	2	1	.....	.....	1

## SCARLET FEVER.

Counties.	January....	February ..	March.....	April.....	May.....	June.....	July.....	August.....	September ..	October .....	November...	December...
Atchison .....			1									1
Clay .....	1	3	1	2								1
Crawford.....			1	3	2	1		1				
Davis.....					1							
Decatur.....			1							1		
Ford.....												
Jewell .....			1									
Johnson .....			1		1			1				
Labette .....												
Leavenworth.....								1		1		
Linn .....			1	1								
Lyon.....			3	3					3	1		
McPherson.....			1		1	1						
Miami.....	1		1		1	1				1		
Phillips.....				3	1	2		1				
Russell.....							1					
Sedgwick.....						1						
Shawnee.....		1										
Sherman.....											1	
Wilson .....	1		1									
Totals.....	3	4	12	12	6	5	1	3	4	4	1	2

## DIPUTIERIA.

[illegible]



## DIPHTHERIA—CONCLUDED.

Counties.	January....	February ..	March.....	April.....	May.....	June.....	July.....	August .....	September ..	October .....	November ..	December....
Lyon.....										1		
Marshall.....	2					1				1		
McPherson.....	5	1		1					2	1	1	
Miami.....			3									
Montgomery.....										1	1	
Nemaha.....			1						1		1	
Osage.....				1		3						
Osborne.....		1					1	1				
Pawnee.....		1	1									
Phillips.....		1		1	2	1						
Pottawatomie.....	1				1						1	
Russell.....				1								3
Shawnee.....			1	1								
Thomas.....											3	
Wabaunsee.....	3		2								1	1
Washington.....				1		1						
Wilson.....											1	
Totals.....	16	6	9	8	17	14	5	3	16	15	17	12

## TYPHOID FEVER.

Counties.	January....	February ..	March.....	April.....	May.....	June.....	July.....	August .....	September ..	October .....	November ..	December....
Atchison.....	1	1								1	2	2
Anderson.....								1				1
Clay.....												
Comanche.....	2											
Crawford.....		1	1		2			2	4		1	
Decatur.....								1	2			
Doniphan.....								1	2	1		
Elk.....					1				1			1
Ellsworth.....								1	1			
Ford.....							2					1
Graham.....								1	3	4		4
Harvey.....				1			1	1	2			1
Hodgeman.....									1	1		1
Jewell.....				2					4	2		3
Johnson.....	2	2	1					4	1			
Kiowa.....								1				
Kingman.....						1			3	1	1	1
Labette.....								1	3	4	1	
Lane.....						1						1
Leavenworth.....											1	1
Lincoln.....					1			1	1			
Linn.....			1	1				1		1	2	1
Marion.....	1											
Marshall.....	1	1										
Montgomery.....							1	3	1	1	1	
Miami.....									2			
Nemaha.....								2	2	1		
Neosho.....										1		
Osage.....			1				1				1	
Osborne.....				1					1	2		1
Pawnee.....									1	1		
Phillips.....						1	3	1	2			
Pratt.....				1		1			1		1	
Rawlins.....			1									
Russell.....	1											
Saline.....	1		1					1	1			
Sedgwick.....	1						1	1	2			
Shawnee.....			1				2				2	
Sheridan.....								2	1		2	
Thomas.....										2		
Wabaunsee.....								1	2	2	1	
Wichita.....												
Wilson.....			1				1	1		2		1
Woodson.....	1					1					1	
Totals.....	11	5	7	7	4	6	12	28	41	28	17	20

Below is a comparative statement, which may be of interest to anyone who will examine it, of a list of counties, and number of *deaths* in each, resulting from the ten diseases that are very dangerous to public health, and were reported to the Secretary of the State Board of Health by the county health officers, for the year 1889:

Counties.	Small-pox.....	Measles.....	Whooping-cough..	Scarlatina.....	Diphtheria.....	Dysentery.....	Typhoid fever.....	Pernicious malarial fever.....	Cerebro-spinal fever.....	Cholera infantum..
Anderson.....		5		2	20		3			10
Atchison.....		1		1	3		4	3	1	16
Butler.....	1	1			2		5			
Chase.....		1	1							
Cheyenne.....						3	1			3
Clay.....			1		12	1	1	11	1	3
Crawford.....		2	2	5	3	3		3	3	8
Decatur.....	2								1	
Doniphan.....					4					
Ellsworth.....							4			6
Finney.....				2	1	1	1		1	3
Ford.....		1	1		1	4			8	2
Franklin.....				1	2		3			
Geary.....		1	3	1		2	13	4		12
Greeley.....				2	2			3		5
Hodgeman.....					3		1			
Jackson.....			1							
Jefferson.....							1			
Jewell.....		2	8	1	3		4		1	5
Johnson.....		1			2	1	4	5	2	4
Labette.....		1	1			1	5	3	4	1
Lane.....								3		
Leavenworth.....					1		1		1	
Lincoln.....				1				1		1
Linn.....			1		3	1	2	1		6
Lyon.....	3		1							
Marion.....		1	1		3					1
Marshall.....			4		5				1	14
McPherson.....			1	3	9					7
Miami.....			5	7	4		9		3	9
Meade.....							1			
Montgomery.....						1	1	4		3
Ness.....		1		18	2				1	3
Nemaha.....			1	1	1		1			3
Norton.....							2			3
Osage.....		6	1	1	1		1	1	3	5
Osborne.....			1	3		1	4	1		6
Phillips.....		1	2	4	2	1	3			4
Pottawatomie.....			1							2
Rawlins.....							4			
Scott.....	1						1			
Sedgwick.....	1	1		3	1		1		4	2
Shawnee.....		5	1	2	8	1	1	7	1	6
Sherman.....							1			1
Thomas.....			2	1		1	4	1		4
Wabaunsee.....		3			4		8		1	5
Wilson.....		8	2				2			2
Woodson.....	1	1	3	6	1		4	1		14
Totals.....	16	43	45	65	102	24	105	53	32	179

Below is a comparative statement, which will be of interest to anyone who will examine it, of a list of counties, and number of *cases* in each, resulting from the ten diseases that are very dangerous to public health, and were reported to the Secretary of the State Board of Health by the county health officers, for the year 1889:

Counties.	Small-pox.....	Measles.....	Whooping-cough.....	Scarlatina.....	Diphtheria.....	Dysentery.....	Typhoid fever.....	Parietal fever.....	Cerebro-spinal fever.....	Cholera infantum,
Anderson.....					100					
Atchison.....	6									
Bourbon.....	75									
Brown.....	80									
Butler.....	15									
Cowley.....	3									
Cheyenne.....				5		10	5	10		
Decatur.....	53									
Geary.....	7									
Greeley.....				8	18		37			
Greenwood.....	22									
Harvey.....	9									
Hodgeman.....					9		2			
Jefferson.....	1									
Jewell.....		166		13	16		30			5
Johnson.....				13	2		10			10
Kingman.....					6		10			
Labette.....				3	2		5			5
Linn.....	8				50		2			6
Lyon.....	38									
Montgomery.....	4									
Meade.....							1			2
Miami.....				7			9			9
Morris.....	6									
Nemaha.....				1	1		1			6
Norton.....	7									
Osage.....				3			4			7
Phillips.....	1			4						
Rawlins.....	1						9			
Rooks.....				50			7			11
Russell.....				2						
Rush.....	1									
Scott.....	12									
Sedgwick.....				5	3		5			
Shawnee.....	14			149	47					6
Sherman.....				3	5		30			3
Stevens.....				2	5		3			
Thomas.....				1						4
Woodson.....	24									
Totals.....	387	166		269	264	10	170	10		77

Below is the tabulated statement of deaths reported from the same counties for the year 1889, by months, from the four following diseases very dangerous to public health, viz.: Measles, scarlet fever, diphtheria, and typhoid fever:

## MEASLES.

<i>Counties.</i>	<i>January....</i>	<i>February ..</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September..</i>	<i>October .....</i>	<i>November...</i>	<i>December...</i>
Anderson .....				3	2							
Atchison.....			1		1							
Butler .....				1								
Chase .....												
Crawford.....					1				1			
Ford .....											1	
Geary.....							1					
Jewell.....			2									
Johnson.....				1								
Labette.....				1								
Marion.....			1									
Ness.....	1											
Osage.....	1	2		1	2							
Phillips.....								1				
Sedgwick.....				1								
Shawnee.....		1	1	1	1		1					
Wabaunsee.....			2	1								
Wilson.....		4	3	1								
Woodson.....				1								
Totals .....	2	7	10	12	7		2	1	1		1	

## SCARLET FEVER.

<i>Counties.</i>	<i>January....</i>	<i>February ..</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September..</i>	<i>October .....</i>	<i>November...</i>	<i>December...</i>
Anderson .....	1	1										
Atchison.....	1											
Crawford.....	2	1		1	1							
Finney.....												2
Franklin.....		1										
Geary.....												1
Greeley.....									1	1		
Jewell.....						1						
Lincoln.....			1									
McPherson.....	1	1	1									
Miami.....			4	3								
Ness.....	2	2		5	7							2
Nemaha.....		1										
Osage.....												1
Osborne.....		1		1	1							
Phillips.....	2	1	1									
Sedgwick.....	1									1	1	
Shawnee.....				1								1
Thomas.....						1						
Woodson.....		4	2									
Totals .....	10	13	9	11	9	2			1	2	1	7



## DIPHTHERIA.

<i>Counties.</i>	<i>January....</i>	<i>February...</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September...</i>	<i>October.....</i>	<i>November...</i>	<i>December...</i>
Anderson.....	2	3	5	.....	.....	.....	.....	.....	3	4	2	1
Atchison.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....
Butler.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
Clay.....	1	.....	.....	.....	.....	.....	.....	2	3	2	1	3
Crawford.....	.....	.....	.....	1	1	.....	1	.....	1	.....	.....	.....
Doniphan.....	.....	.....	.....	.....	.....	2	.....	1	.....	.....	1	.....
Ford.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Franklin.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	1	1
Greeley.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1
Hodgeman.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....
Jewell.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....
Johnson.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leavenworth.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Linn.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	1	1
Marion.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	2
Marshall.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
McPherson.....	5	1	1	.....	.....	.....	.....	.....	.....	2	.....	.....
Miami.....	.....	.....	1	1	.....	1	.....	.....	.....	.....	1	.....
Ness.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nemaha.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Osage.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Phillips.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sedgwick.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shawnee.....	2	.....	.....	1	2	.....	1	.....	.....	.....	2	.....
Wabaunsee.....	1	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Woodson.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Totals.....	14	9	8	5	4	3	2	6	12	12	16	10

## TYPHOID FEVER.

<i>Counties.</i>	<i>January....</i>	<i>February...</i>	<i>March.....</i>	<i>April.....</i>	<i>May.....</i>	<i>June.....</i>	<i>July.....</i>	<i>August.....</i>	<i>September...</i>	<i>October.....</i>	<i>November...</i>	<i>December...</i>
Anderson.....	1	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....
Atchison.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....
Butler.....	2	.....	.....	1	.....	.....	1	.....	.....	1	.....	.....
Cheyenne.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clay.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Ellsworth.....	.....	.....	.....	.....	1	.....	1	.....	.....	1	1	.....
Finney.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Franklin.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....
Geary.....	.....	.....	.....	.....	.....	1	.....	2	4	1	5	.....
Hodgeman.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Jewell.....	2	.....	.....	.....	.....	.....	2	.....	.....	1	.....	.....
Jefferson.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Johnson.....	.....	1	.....	.....	.....	.....	.....	2	1	.....	.....	.....
Labette.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	3	.....
Linn.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....
Marshall.....	.....	.....	.....	.....	.....	1	.....	.....	1	3	.....	.....
Meade.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miami.....	.....	3	.....	1	.....	.....	.....	.....	2	2	.....	1
Montgomery.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Nemaha.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Norton.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....
Osage.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Osborne.....	2	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....
Phillips.....	.....	.....	.....	.....	1	1	1	.....	.....	.....	1	.....
Rawlins.....	.....	.....	.....	.....	1	.....	.....	.....	1	2	.....	.....
Scott.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Sedgwick.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Shawnee.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Sherman.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Thomas.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	1
Wabaunsee.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	4	1
Wilson.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....
Woodson.....	1	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Totals.....	11	7	1	5	4	5	6	14	16	16	16	4

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# SUPPLEMENT

TO THE

REPORT OF KANSAS STATE BOARD OF HEALTH, 1889.

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## STATE SANITARY CONVENTION.

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Proceedings, Addresses and Discussions at the Fourth State Sanitary Convention, at Lawrence, Kas., Dec. 4-5, 1889.

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(This report of the convention is prepared from papers furnished by the authors from accounts of the convention printed in the Lawrence and Topeka papers, and from notes by Rev. W. W. Ayres of Lawrence, and Dr. J. W. Redden of Topeka, Secretaries of the convention.)

This convention was held under the auspices of the State Board of Health, arrangements having been made by a local committee of the citizens of Lawrence, acting with a committee of the State Board of Health. The following were the local committees:

*Committee on Entertainment*—Hon. B. W. Woodward, Chairman; Mayor A. Henley, Dr. C. E. Esterly, Prof. F. O. Marvin, and Dr. F. D. Morse.

*Committee on Arrangements*—Prof. L. E. Sayre, Chairman; Hon. John Hutchings, Dr. N. Simmons, Prof. E. H. S. Bailey, and Dr. S. E. Gardner.

*Committee on Music*—F. C. Laslett, Esq., and George Mull, Esq.

*Committee from the State Board of Health*—D. C. Jones, M.D., of Topeka; Frank Swallow, M.D., of Valley Falls; R. A. Williams, M.D., of Olathe, and J. W. Redden, M.D., of Topeka.

The following-named gentlemen were elected as officers of the Convention:

*President*—Governor Lyman U. Humphrey.

*Vice-Presidents*—Rev. J. W. Alderman, Atchison; Chas. S. Gleed, Esq., Topeka; Judge J. P. Hindman, Olathe; Prof. F. H. Snow, Lawrence; H. S. Roberts, M.D., Manhattan; Senator R. W. M. Roe, Grenola; J. W. Balsley, M.D., Oskaloosa; C. E. McAdams, M.D., Wichita; J. B. Carlisle, M.D., Leon.

*Secretaries*—Rev. W. W. Ayres, Lawrence; J. W. Redden, M.D., Topeka.

Among those present were:

Judge J. P. Hindman, of Olathe; Prof. F. H. Snow, of Lawrence; J. W. Redden, M.D., of Topeka; Rev. W. W. Ayres, of Lawrence; Hon. B. W. Woodward, of Lawrence; Prof. F. O. Marvin, of Lawrence; J. Milton Welch, M.D., of Wichita; Miss Sarah Brown, of Lawrence; D. C. Jones, M.D., of Topeka; Prof. E. H. S. Bailey, of Lawrence; Prof. L. I. Blake, of Lawrence; Dr. W. L. Schenck, of Osage City; Prof. Max Winckler, of Lawrence; Prof. L. E. Sayre, of Lawrence; John A. Henning, M.D., of Garnett; W. S. Bunn, M.D., of Lawrence; Prof. F. W. Blackmar, of Lawrence; R. A. Williams, M.D., Olathe; Prof. J. H. Canfield, of Lawrence; Frank Swallow, M.D., of Valley Falls; Mrs. A. L. Diggs, of Lawrence; Dr. Weaver, of Leavenworth; Dr. Morse, of Lawrence; H. E. Hastings, M.D., of Olathe; Dr. Morris, of Lawrence; Dr. Hunter, of Lawrence; besides many of the prominent citizens, professors of the University, and students.



The various sessions of the convention were largely attended by ladies and gentlemen of the city, by professors and students of the University; all of whom took a deep interest in the convention, and many took part in the discussions of the different topics.

### FIRST SESSION.

LAWRENCE, December 4, 1889—8 P. M.

The fourth annual State Sanitary Convention convened at the Y. M. C. A. Hall, and was called to order by the Secretary, J. W. Redden. As the President, Governor Humphrey, was absent, Judge J. P. Hindman, of Olathe, one of the Vice-Presidents, was called to the chair.

Prayer was then offered by Rev. W. W. Ayres.

This was followed by music from the Lawrence Quartette (male voices).

The address of welcome was then delivered by Hon. B. W. Woodward, as follows:

We extend a cordial and warm welcome to all those who have come to attend this convention.

The presence of a sanitary convention in town is suggestive that we have not availed ourselves of the natural drainage, and have done our best to obstruct it. We are no worse than other cities, but we are no better. The world has grown over the idea that epidemics and plagues are special Providential visitations. It is recognized that these come mostly from preventable causes.

The State Board offers an excellent means for bettering the sanitary conditions of the cities. They need the coöperation of the citizens. We greet the gentlemen of the convention heartily, and hope that the influence of its discussions and action may be felt throughout the State.

Judge J. P. Hindman, the presiding officer, responded as follows:

That he with the audience regretted exceedingly that Governor Humphrey could not be present, and preside over the deliberations of the convention. He said on behalf of the officers and members of the convention, that they were very grateful for the reception afforded. It is proper that many of the papers should be, as they are, by the citizens of Lawrence. The people of Lawrence are deeply interested in the work of the convention, and they have shown that they are interested. Proper attention must be paid to sanitary measures in public buildings; but even more in our own homes, and for our own persons. We must know causes as well as effects. We must apply preventives where causes of evil are known. First, procure pure water; second, avoid contamination of both water and air. These matters are best brought before the people by such associations as the sanitary convention.

The first paper presented was from Dr. G. H. T. Johnson, and in his absence was read by Dr. R. A. Williams, of Olathe, as follows:

#### STATEMENT OF THE OBJECT OF THE CONVENTION.

BY G. H. T. JOHNSON, M.D., ATCHISON, PRESIDENT OF THE STATE BOARD OF HEALTH.

*Mr. President, Ladies and Gentlemen:* The object of this convention can be most fully stated by sketching a few thoughts under the head of sanitation. In this marvelous age of steam and electricity, with the multiform energies which they

generate, trained specialists are coming forward in all the departments of life. In the broad field of preventive medicine, the sanitarian is the specialist, who no longer respects the mystery surrounding the origin and development of disease. He searches the whole realm of nature for its causation. He questions the air around, the sky above, the earth beneath us; the food we eat, the water we drink, are all carefully scrutinized by him. He asks with startling results the question whence, how, why, what, in searching for the hitherto hidden origin of disease.

Intelligent people are beginning to trust the sanitarians, and look to them for counsel and help in all questions affecting the public health. In the old country we no longer see the people crowding to the dens of the astrologer, soothsayer and alchemist, and seeking by the aid of their occult influence to ward off disease and death; but they look to the sanitary knowledge and skill of the health officer for immunity from disease and for prolongation of life. In this country the same wire that flashes the news of the outbreak of an epidemic tells also of the presence there of the health officer, whose resources are depended upon to stay the onward spread of the deadly epidemic. And when some great heart-rending disaster sweeps away a city or community, like the Johnstown flood, the health officers of the great States of Pennsylvania, Ohio and New York are called to the scene of wreck and death, that their advice and counsel may prevent the possible outbreak of an epidemic which would imperil the lives of the heart-broken survivors of the flood and drive from the field of action those engaged in the humane work of recovering from the debris of the flood, the bodies of the dead.

Thus it appears that the sanitarian is acting a more prominent part in the drama of human life than at any previous time in the history of our race. It is true that medical hygiene dates back to the early history of the tribes, but it is only a small part of what is now called Sanitary Science. Public hygiene as taught in the past did not constitute a science.

When chemistry and physical science were unknown, the priests enforced a crude form of hygiene through church ordinances. As civilization advanced, it became the study of the prophet, the legislator, and philosopher. In this social evolution, we find Moses invoking Jehovah, Lycurgus appealing to patriotism, Hippocrates interpreting nature. Moses practiced sanitation to a limited extent. He isolated the victims of the plague and leprosy. In the 14th chapter of Leviticus is found this sanitary rule: "All the days wherein the plague shall be in him he shall be defiled; he is unclean; he shall dwell alone; without the camp shall his habitation be." The selection of suitable food for their people has been intelligently looked after by the Jewish authorities from the days of Moses down to the present time. At a late meeting of the British Medical Association, Dr. Drysdale of London read a paper on the Rarity of Consumption among orthodox Jews. The evidence collected by him proved that among the strict Jews this complaint is extremely rare. He attributes their exemption from this disease, which causes one-seventh of all human mortality, to the careful selection of their food, and more especially their meats. Dr. Drysdale had been permitted to witness the slaughter of animals at the Deptford cattle market, and the way in which such animals were inspected to ascertain when their flesh was free from impurities and disease. The organ most closely examined by the Jewish inspectors was the lungs, and the smallest marks of pleurisy, pneumonia or tuberculosis occurring in cattle and sheep, caused their meat to be rejected by the inspectors, so that about one-third of all the animals examined were rejected as unfit to become the food of orthodox Jews.

In the light of this important evidence, and the well-established fact that tuberculosis is a very common disease among our cattle, sanitarians must heartily indorse the action of the authorities of those cities which are demanding the inspec-

tion of all cattle slaughtered. This inspection should be much more general and thorough than at present practiced. It should apply to all meats offered for sale as food, and the inspection should not stop with the rejection of all animals that may appear as unfit for food, but the meat of all slaughtered animals should be carefully examined for evidence of disease by trained experts, and all suspicious meat condemned. Secure to our people wholesome food, a pure water, and enforce surface cleaning by cremating the garbage, all dejections, waste matter and other impurities, and health will be more secure and death less frequent.

From the great good to result from the work engaged in by the sanitarians, it might be reasonable to suppose that all physicians are sanitarians. It might be deemed offensive to be told that physicians are not all sanitarians, yet comparatively few manifest an interest in this good work.

Human nature, as usually constituted, seeks its own interest before the public good, and it pays the physician better to minister to the sick than to engage in the laudable work of preventing sickness. He takes more pride in attempting to diagnose accurately, and curing, if he can, the 1,100 or more diseases that are given names in our medical nomenclature, than in attempting to prevent the development of the epidemic which may not pass harmlessly by his own door-way. Yet it is pitiful to see a medical man attempting to cure disease without a thought for a mode of prevention. He enters the room of a typhoid or diphtheria patient, gets a short history of the disease, then prescribes his pills or powders, his fluid extracts or tinctures, and hurriedly leaves the room. Does he examine the walls, the floor, the plumbing, the sewerage, for the cause of the disease? Does he look for microbes or floating debris of animal life? Yet whole families are swept away by the same disease in a short time. When a physician under such unfortunate circumstances fails to call to his aid all the resources of sanitary and medical sciences, he is criminally guilty. Had the Government arrested every physician at New Orleans and Memphis during the epidemic of yellow fever there and imprisoned them for life, it would have been considered harsh treatment, but might have resulted in great public good.

Yet be it said to the credit of the members of the medical profession, that all of them are not indifferent to the claims of sanitation. The most active and effective workers in the sanitary field are practicing physicians, who place the public health above all personal or professional considerations. It is evident to those of us who have been working in this field for years that there is a perceptible waking-up on the part of the public to the vital interest at stake! When the first Sanitary Convention was held, at Wichita, the attendance was small and so little interest was manifested that school children were not permitted to hear a paper on School Hygiene. At each succeeding annual convention we have noticed a marked increase in attendance and interest on the part of the public. One of the most encouraging signs of the times is the interest taken in this movement by the young people, who will soon shape the legislation and control the affairs of the State. To increase this interest and to awaken all our people to the vital importance of a more general and better enforced sanitation is the object of this convention.

If in the territory adjacent to our western and northern borders there were hostile tribes of men who annually overran our States, murdered from two hundred to four hundred thousand of the people, and maimed as many for life, our people would be intensely stirred and aroused to the importance of united action. The States would organize, arm and equip men, the resources of the General Government would be called upon, and millions in money appropriated, and hundreds of thousands of men would be marshaled to protect the lives of our people. In many thousands of homes throughout the length and breadth of our land, a silent enemy is carrying

forward a work as deadly and destructive as that of these supposed hostile tribes; his presence is unheralded by bugle's blast or pulsing drum; only the crape, the coffin and the new-made grave attest the effectiveness of his work. The annual death-roll of this enemy of our race, preventable disease, numbers from two to four hundred thousand human lives. Yet this great waste of human life creates scarcely a ripple of excitement on the surface of society unless a few of the many thousands fall victims to yellow fever or cholera; then the excitement is great and panic takes the place of reason. Does the type of the disease make life less sacred when cut short by measles or scarlatina? Is the life of the consumptive or malarious patient less valuable than that of the cholera or yellow-fever patient? An important work of this and similar conventions is to awaken the people to the menacing danger from these ever-present but wholly preventable diseases, and to teach them to exercise greater vigilance as to their sanitary surroundings, so that they will not permit any condition to exist that would be a cause for the development of any epidemic of disease. For when these deadly epidemics begin their march, you cannot always say, "Thus far shalt thou come and no farther." In these cases, as in all other conditions, prevention is much better than cure.

It was decided to hold this convention at Lawrence, that we might impress upon the minds of the youth gathered here from all parts of the State the importance of this movement in the interest of the health of the people.

Could we accurately estimate the cost in money, time, suffering and valuable life of preventable disease, we should most certainly enlist the earnest and cordial support of these young people in its suppression.

On investigation, we find that of the one million people who die annually in the United States, almost one-third, if not more, die from preventable diseases. Further investigation shows that as a matter of statistics twenty-five persons are sick on an average of nine days for every person that dies. The annual loss of our people from preventable disease and death cannot with any degree of accuracy be estimated, but it certainly amounts to at least \$300,000,000. In this loss in dollars, no estimate is made of the physical pain, the untold anguish, the wrecked intellects, the hopeless maniacs, helpless orphans, the world of woe and suffering that are the sad results of preventable disease, which, when it permits its victims to escape with their lives, too often leaves their health permanently impaired.

Good health is the most valuable capital man can possess. The life of the healthy poor man is far happier than that of the invalid millionaire.

If from the good words spoken in this convention for the cause of sanitation, there shall spring up an influence that shall broaden as the life-work of those gathered here shall broaden, then immeasurable possibilities for good will be the certain result.

On a typical autumn day in last October, in the beautiful Mt. Vernon Cemetery near Atchison, Kansas, there was laid to rest with military honors and manifestations of deepest sorrow on the part of thousands of his neighbors and friends from all parts of the State of Kansas, an ex-Governor of the State, who a third of a century ago earnestly espoused the then weak cause of the struggling Territory of Kansas. It has well been said that to write his history from that time up to the day of his death would be to write the history of Kansas. He defended with all the enthusiasm of boyhood and early manhood the cause of freedom against slavery as represented by the contending forces who were then struggling for the possession of Kansas; and when these struggles and skirmishes in which he exercised a controlling and salutary influence proved to be but the prelude to a great national struggle for Union and liberty, he proved himself a true patriot and brave soldier by leading his regiment on many a bloody battle-field.



My young friends gathered here from many hundred happy homes of the State, it may be that but few of you will have the opportunity of engaging in the exciting work of founding commonwealths. None of you may even feel it to be your duty, as Governor Martin felt it to be his, to lead a regiment on another dark and bloody battle-field of Chickamauga, where the loss of sixty per cent. of his men attests their bravery and the awful carnage of the day. It may not be the privilege of any of you, as it was his, to lead a brigade of three regiments of men up the rugged and cannon-swept heights of Missionary Ridge, and plant among the first the flag of his country on the captured works of the enemy; but it will be your duty to defend with that unwavering steadfastness of purpose that marked the acts of our departed friend, the right against the wrong. The State which has made such ample provision for your education expects that you will become interested in every good and noble work that has for its object the lifting of the people to a higher plane of health, happiness and prosperity.

Therefore we feel free to ask you to take an interest in the great sanitary work which this convention seeks to advance, not a lukewarm or indifferent interest, which is so often manifested now by the emasculated supporters of various movements, but a deep and abiding interest in the paramount importance of the preservation of the public health.

Be vigilant to seek out the cause of disease and prevent its development when possible, and remember while you may accomplish much in your individual capacity in this direction, you can do vastly more by allying yourself with those who work in the interest of the public health. Trust no man in public position who values lightly the public health, and who hopes to make a cheap reputation as a political economist by crippling and abolishing the only agency the State has for the preservation of health and lives of its citizens.

Remember that "public health is public wealth," and that he who prevents the development of disease is a greater benefactor of his race than he who cures it.

Prof. F. O. Marvin then presented the following paper:

#### SEWERAGE AND DRAINAGE OF LAWRENCE.

BY PROF. F. O. MARVIN, OF THE STATE UNIVERSITY, LAWRENCE.

The city of Lawrence lies on undulating ground, with considerable differences of level. The Kansas river divides the city into two portions, that lying north of the river being comparatively low and flat and on a sandy, pervious soil. The population here being scattered and the soil absorbent, no attempt toward drainage or sewerage has been made on that side of the river.

On the south side, the bank of the river is about 20 feet above high water. The ground rises gradually to the south and west to the foot of Mount Oread and its adjacent bluffs, and here rises rapidly to a height of over 200 feet above the river. At the north end of Massachusetts street, at Winthrop street, there is a high knoll standing by itself and also another knoll at the east end of Berkeley and Quincy streets. These high points determine the high lines between the various watersheds of the city. If we were to draw a line from the post office to the old University building, then continue to the new University building, thence eastward to the Quaker church, thence northward to the railroad bridge, we should have roughly the outline of a district whose rainfall would reach the river just east of the Santa Fé depot.

To the south of this is a large triangular section bounded on the south by a line running from the University to the residence of Col. Learnard, near the Indian School, and forming the divide-line between the Kaw and the Wakarusa, which has

an outlet for its rainfall through a shallow channel that follows the Southern Kansas Railway to the east of the Quaker church. This district is quite flat, and though large, does not furnish as great flood volume as the other drainage areas with steeper slopes. The flood-water from this district has no well-defined outlet to the river, but seems to lose itself in the numerous ponds that are found between and along the tracks of the Santa Fé yards.

On the northwest side, in what we call "West Lawrence," there are two drainage areas, one bounded on the east by the postoffice-University line and on the west by a line running from the north end of Ohio street to the windmill; the other bounded on the east by the Ohio street and windmill line, and on the west by a line extending from the shoe factory in a direction a little west of south to the high bluff.

These last two districts are drained by well-defined deep gullies, having outlets into the river near together and above the dam, and only a short distance below the water-works.

No attempt has been made to take care of the storm-water or sewage in any of these districts, except in the one first mentioned. In this one there is a so-called sewer, which has its outlet at the east end of Henry street, at the gas works, and extends up Henry street to the alley east of Connecticut street, then southward along its alley to Warren street, then westward along Warren street to Vermont street. There is a smaller branch that continues the line in the alley east of Connecticut street southwardly as far as Quincy street.

This drain is made of rough stone walls on a stone paving, is laid up without mortar, is of about 6 feet by 6 feet, opening at the lower end and covered with flat rock from our local quarries. It is poorly built and its covering-stone have broken and fallen in several places, while more of them are cracked, and only need the chance extra load to give way. There are two good short sections, however, of recent construction, one built of stone in cement, the other of circular form made of two rings of brick-work laid in cement. Into this rough stone box is admitted storm-water from streets, carrying with it of course the street mud and vegetable and animal refuse. Connected with it are also numerous private drains, carrying cellar seepage, kitchen refuse, and the products of water-closets. No one knows the exact number of these drains, how they are laid, how connected to the long-drawn-out cesspool, nor whether the house ends of these drains are open or trapped. Every year, people who live within reach, add to this number. Each man does as he pleases, and puts in his drains without any attempt at regulation or supervision on the part of the city. There is then turned into this stone box a mass of filth which accumulates and rots there, giving off odors that appear at the untrapped catch basins at street-corners, and that penetrate through the loose sides into the soil. I have been through the lower portion of this drain at a time shortly after a heavy rainfall, and found the bottom covered with large irregular stones around which were gathered heaps of all sorts of filth, sticks, straw, carcasses of dogs and chickens imbedded in a black, slimy mud into which the foot sank with a sickening sensation.

And this is the only sewer that Lawrence possesses. In almost all other parts of the city private or neighborhood drains abound—some short, some long. Most of them are merely cellar drains to prevent the flooding of our cellars, which in our soil is an evil met with by nearly every householder on the south side of the river. Some of these drains receive garbage and slops from the kitchen, and some of them are connected with water-closets, the owners discharging the mass where they can, in a very few cases into private cess-pools, in the majority of cases into the gutter, creating a nuisance not only under their own noses, but under the nose of every passer-by. This is especially true of those streets running along the slope of the

bluff, and where the only possible outlet of the drains on the upper side is into the gutter.

In "West Lawrence" the two ravines spoken of are used as catch-alls, and some of the people living in this section, having dry cellars and having drains that get rid of their own refuse—at least that carry it out of their own sight—forget to be public-spirited, or even selfishly, long-headedly wise, and are opposed to the introduction of a sewerage system. Not that they are more selfish than other people in other parts of town, but that they have disposed temporarily of the argument of necessity that urges others.

And let me here say that it is a mistake to let public improvement, especially that which affects the health of a people, go from year to year, waiting for the time when they think they will have enough extra money, over and above that which they think they need for their own comfort, to spend for the public good. Where there is this waiting on the part of the community, the individual meets his own necessities in his own way, and is apt to think that when he has placed the evil out of his own sight he has solved the problem. He has spent his money, he has *his* return, and he objects to any further tax. And then he has failed to acquire a habit of being public-spirited, and the time when he will have any money to spend in that way never comes.

But whatever the surroundings of a man, however well his own habits and his own household may be regulated, he cannot afford to ignore the fact that he has a personal interest in every individual in the community, an interest that may unexpectedly touch him to the quick. This is especially true as regards his health and the health of his family. And then the community, of which he is a part, from the economic standpoint has no interest whatever in a dead man. The dweller at Oak Hill produces nothing, and the sick man is a tax. By whatever means then the death-rate can be lowered, the amount of sickness reduced, that means should be employed. It is not enough to know that the death-rate is low. The question should be, can the death-rate be lowered? If so, by what means? Will the means employed in itself prove a profitable investment? Can the people stand the cost?

I cannot go into details in this short paper, but can refer only to the experiences of other places. Man requires pure air, pure water and a pure soil, to live in health. Their pollution is man's own act. And yet people often adopt resolutions beginning with a "Whereas, kind Providence has seen fit to remove," etc., when the death was really caused by man's own ignorance or neglect.

Science tells us that certain diseases are preventable. Which ones? Those that arise from filth accumulations. How? By removal of the refuse before the putrefaction begins. Many plans have been tried to accomplish this end, with varying success, no one of which meets the whole case. But the world seems to have settled on the system of water-carriage in sewers as the scheme most nearly filling the conditions. A well-connected and well-managed sewerage system lowers the death-rate, prevents sickness, enhances the comfort of living, and increases the value of property, which statements are proved by the hundreds of cities and towns. The way in which a city takes care of its organic wastes has come to be an index of the civilization of that place. A people that throw their slops in back yards or discharge them into the gutter, and line their alleys with uncared-for and offensive conveniences, are looked upon as deficient in public intelligence, however much intellectual or social culture may be possessed by the individuals.

There are two well-defined systems of water-carriage sewerage, the combined and the separate. Each has its strong adherents among sanitarians and engineers. But the wise designer does not follow a system because it is a system, but rather studies each problem by itself and does that which in his judgment is best in each case, following a system if it is applicable, rejecting it in whole or in part if it is not.

The combined system aims to carry off, first, all storm-water from roofs, street surfaces, and in fact all rainfall that is not absorbed by the soil; second, all refuse from house or factory that can be carried by water.

The separate system excludes all storm-water, except perhaps a limited amount of roof-water, and aims to transport only the refuse that can be carried by water, and usually includes some arrangement for an automatic flushing by suddenly discharging into the pipes a large volume of water at each dead-end of the system. Neither of these plans provides for the removal of ashes, stable refuse and other solid wastes that cannot be water-carried.

The combined system is the older scheme, and is the outgrowth of man's first attempts to rid himself of his wastes, and is but an open gutter or ditch made deeper and covered and refined by proper adjustment of its grade, its form, its size and its material to its work. This has the prestige of age and long use. The separate system is of a later date, but is used extensively in America and England. It has just as warm advocates as the other, and they have placed it on such a footing that its claims for recognition cannot be ignored.

Let me, in as brief a way as possible, compare these two methods. Large sewers are usually made of brick or stone, which are rough and porous. The roughness causes a deposit of organic slime on the walls, which putrefies and pollutes the air of the sewer. The porous character of the material, together with the cracks due to the unequal settling, allows the sewage to leak out into the soil in times of dry-weather flow, when the level of the ground-water is below the level of the sewer. This leakage may pollute the water of adjacent wells. The volume of the daily sewage-flow is small compared to the storm-flow, which must govern the size, so that in dry weather the stream of sewage is spread out in a thin layer over the bottom of the sewer, and consequently has a slow velocity and a low transporting power. This is remedied by making the sewer egg-shaped in cross-section, or by using a half-section of tile set into the bottom, which will carry the dry-weather flow of sewage. The street-water, at time of heavy rainfall, is apt to carry mud, stones, etc., through the catch-basins, and as the storm subsides these will be left in the sewer as obstructions, and as centers around which will gather putrescible matter. An exceptional rainfall may cause an overflow in the cellars and basements, carrying sewage with it. Chicago and London have both suffered severely in this way. It is impossible to thoroughly flush a large sewer, because of the practical difficulty of providing a sufficient volume of water. It is also impossible to thoroughly ventilate large sewers. Their cost is a disadvantage. Elliot C. Clark, of Boston, perhaps the strongest and fairest advocate of the combined system, admits that its first cost will be two and a half times the cost of a separate system carrying the same sewage, to say nothing of the cost of maintenance. Other writers, whose opinion is of equal weight, notably Mr. George E. Waring, makes this difference greater. An estimate for the combined system at Schenectady, N. Y., was \$240,000, as against \$35,000 for the separate system as constructed.

Physicians are agreed that sewer air admitted into a house causes sickness. This has been attributed to a so-called sewer gas, the product of decomposition. So engineers, adopting this theory, have exerted themselves to get rid of this gas by ventilation. The latest results of investigation however question the existence of any such gas, and point towards bacteria as the cause of this sickness. The slimy walls of a dark sewer offer all the conditions—heat, moisture, darkness, and the presence of ammonia—that are favorable for the production of these low forms of life, and which float off on the air as dust is carried. A large sewer then may be the breeding-ground of these dangerous things, and such flushing or ventilation as may be possible will not prevent their propagation.



Now on the other hand, the vitrified, glazed pipes of the separate system are smooth and impervious; their size can be proportioned to the nearly constant flow of sewage. The flow will be concentrated and of a greater depth, and so will have the higher velocity and more power for transporting solids. The sewers, being smaller, can be economically flushed and well ventilated. When rightly proportioned as to size and given proper grades, there will be no deposits, and the sewage will be carried from dead-end to outlet before active decomposition sets in. The smooth sides of the pipes afford no good soil for bacterial growth. No sewer gas is evolved. The cost will be from one-fifth to one-eighth of the cost of the combined system. But in making a comparison of the cost, there should be added to the cost of the pipe sewers, the expense of the *necessary* storm-water sewers. Storm-water, however, is not often more than inconvenient, and can be allowed to flow in streets even with advantage up to the time when its accumulation becomes dangerous. The *necessary* sewers would not aggregate a length anywhere near the amount required were they made to carry sewage as well, so that in many cases the total cost of the separate-sewage and storm-water sewers would be less than the cost of the combined system. James T. Gardiner, Director of the New York State Survey, and member of the State Board of Health, after looking into these matters both here and in England, where the combined system has had its full development, says in a report to his Board: "In view of these facts, I am forced to conclude that from a sanitary point of view the combined system of sewerage is a failure." And again he says: "I am of the opinion that the separate system of small sewers avoids in great measure the inherent sanitary difficulties of the combined plan, and that it is an efficient and economical method of removing the sewage of towns."

Based on this report, the State Board of Health passed a series of resolutions, among which are the following paragraphs:

"That towns having a water-supply should be provided with a system of small sewers adapted to carry only sewage, including excreta, slops and waste-water, and excluding storm-water, which should be taken care of separately."

"That the costly plan of large combined sewers for carrying sewage and storm-water together has proved a failure both in England and in this country, while a separate system, when properly constructed, avoids in a great measure the evils from sewer air, now so common, and is much less expensive for most towns."

"That the separate system of sewers with flushing-tanks is hereby recommended for general use in this State."

The city authorities of Lawrence have chosen a plan of sewerage based on the separate system. They have the plan and report of its designer, Mr. H. L. Marvin; also the report of Mr. Andrew Rosewater, of Omaha, making some suggestions of amendment, but not changing at all the fundamental plan. The Council desires to act, and very properly wants to act in the right way. I have written what I have because the wisdom of building any sewers at all has been called in question, and because the wisdom of the Council in selecting its plan has seemed unwise to some. To my mind no other plan for Lawrence is possible financially, nor is any other desirable from a sanitary point of view with our natural drainage as it is; our storm-water is no serious evil. I am convinced that Lawrence needs this improvement; that it will prove to our advantage, both in tending to improve the health of our people and adding to our comfort, as well as enhancing the value of our property. I am equally certain the tax can be met.

As long as the valuation of our property for assessment remains but one-fourth to one-sixth of its real value, I will have no sympathy with the cry that excessive taxation prevents the use of any money for public improvement. Neither have I sympathy with the man who admits that a thing is good in itself, that it abstractly would be a public good, and who, when some men or company of men get that

thing going, rises in his might as a citizen and says, "Hold! I can't stand the expense; we have got along very well for twenty years without that, and we can get along a few years more."

Lawrence has had some experience in spending money, getting ready to do things, which were never done. I hope we shall have a little more enterprise in this matter of sewerage and not be outdone by our neighboring cities.

On motion, said paper was received for discussion by the members present.

#### DISCUSSION.

DR. W. L. SCHENCK urged the importance of sewerage in Lawrence. It is important to the whole State. The students are sent here for education, but people demand that they be sent home with sound bodies as well as cultivated minds. He questioned, however, the propriety of depositing the sewage in the Kaw. Advocates the adoption of a suction system at the outlet. *Proposed disposition:* Now it is wasted, but it is valuable; you want to throw it into the Kaw, but you should take it out of the sewer as nearly dry as possible, then disinfect it. It should be used for fertilizing the soil. It ought not to go into the river, particularly such small ones as Kansas possesses. He did not give a *modus operandi*.

PROF. SNOW seriously objected to throwing sewage into the river. Topeka throws 160,000 pounds of excrementitious matter into the Kaw every day. *Intermittent filtration:* Discharge on land set apart for this purpose; five acres might be set apart and prepared for filtering of sewage; the liquors pass through and are purified. One acre used one day, another on another, etc.; sewage has time to filter through. The solid part is found to be but a shallow film, which is easily dug in. Sewage is made use of, but the prime object is to get rid of the poison.

PROF. MARVIN spoke of "how to dispose of sewage so as not to injure others." This is the question, not what profit may be got out of it. Thinks the proper question is not settled. The English experience is against any profit from the sewage.

The chairman said Kansas City refused to use the water of the Kaw some years ago, and preferred the water of the Missouri, claiming that the Kaw was contaminated.

The next paper was presented by Dr. Redden, of Topeka, as follows:

#### KNOW THYSELF—SELF-KNOWLEDGE.

BY J. W. REDDEN, M.D., OF TOPEKA, SECRETARY OF THE STATE BOARD OF HEALTH.

"Know thyself" was a motto inscribed in Greek on the oracle of Apollo at Delphos, and attributed to Thales. The Greek poet was impressed with its importance when he remarked, "I am not yet able according to the Delphos inscription to know myself, and it appears to me very ridiculous while ignorant of myself, to inquire into what I am not concerned in." Is it not equally true, that even at the present day, the great majority of the people know but little of themselves? And how few there are, therefore, that are capable of communicating this knowledge to others,

however near or dear to them. No man liveth unto himself, is a self-evident truth, and applicable to the social and sanitary life.

The object of this paper is to suggest a few facts that may lead the hearer and the reader to a proper conception of this responsibility, and stimulate him to know more of himself, that he may thus be able to contribute practical knowledge to his fellow-men, elevate humanity, and thus add to the happiness and well-being of his neighbors.

How few parents are there who commence early in life and explain fully and carefully to their boys and girls the principles and virtues that adorn, ennoble and elevate character, and prolong lives; or point out in true colors the dangers, evils and temptations that beset the young, dwarf the intellect, impair health and manhood, and very soon bring misery to the victim, and sorrow to the hearthstone. Have you not known of many starting out with every indication of a long and promising womanhood or manhood, and full of hope, yet prematurely cut down, like the tender and beautiful flower nipped by the frost, or scorched by the sun; and attributable to the want of self-knowledge? Can you not recall instances of boys and girls, hale and robust, and yet before reaching even middle life called suddenly away by the blasting influence of acquired disease, not hereditary, or constitutional, but brought on from the want of the knowledge of the laws of health?

The poet has said, "There is no flock, however watched and tended, but one dead lamb is there; there is no fireside, howsoe'er defended, but has one vacant chair." And yet there are few families, even in this age of progress, reform, science and wealth, but what have several vacant *little chairs*. Is it not therefore a sad commentary on the culture, elevation, refinement and knowledge of the citizens of the nineteenth century that these results are largely attributable to the want of self-knowledge? No stream can rise higher than its source; equally true is it that no one can impart knowledge to another, that he does not possess himself.

During my college days, I knew intimately young men of brilliant intellect, receiving the class honors, admired, eulogized, envied—yet their brief career was soon ended; the casket was too frail to retain the jewel; they shone resplendent for a moment, but passed away, soon to be forgotten, like a brilliant meteor with a silver train, speedily obscured in utter darkness. An example of the willful neglect of our motto. While many others, less favored, possessing well-balanced minds in vigorous bodies, made sure but steady progress, entered the various avenues of life, were called to the highest positions, and worthily obtained national renown in the forum, on the bench, in the professor's chair, or in the lead of scientific discoveries—due in a great measure to the proper observance of the inscription of the Greek philosopher.

It is an encouraging feature to note that in our public schools, hygiene, and the effect of alcohol upon the human system, are being taught; the good resulting therefrom cannot be estimated. It is another sign of moral reform in this progressive State. It is well here to note that there are only two universities in Germany that have not established professorships of hygiene.

It is needless to state that the following incident did not take place in Lawrence, or in Kansas; it is, however, a forcible argument of the importance of self-knowledge: At a teachers' examination in a certain county, in answer to the question, "What is hygiene?" a young lady applicant for a certificate to teach school answered, "It is the soft spot on the top of a baby's head, which gradually becomes harder as the baby grows older." Of course, the board of directors did not issue the certificate.

It is with matters pertaining to health as it is with everything in this world of extremes, that the ideal towards which we should all strive, but to which compara-

tively few attach sufficient importance, is the happy medium in everything. It is not alone excess in that which is undoubtedly regarded as injurious to health, that is in reality so; for it is eminently true that excess of any kind in anything is prejudicial to health and happiness. Too much roast beef, too much exercise, too much sleep; too much of any of the good things of life, is not true wisdom. Yet it is a fact that the majority of human being are extremists. If we but intelligently read the pages of history, we must be inevitably led to the conclusion that to develop the highest possibilities of mankind, man must endeavor to cultivate and practice a happy medium in all things; for through its agency alone can we hope to attain the greatest perfection of which humanity is capable.

The Hon. Daniel Manning, late Secretary of the Treasury, was a victim to imperfect plumbing, bad ventilation and impure air, in the Treasury Department; and thus from lack of self-knowledge contracted a disease that called him to a premature grave.

In this connection, I wish to refer to two of the greatest English statesmen; now mark the contrast. Mr. Gladstone is living, hale and hearty, at over 80 years old. Mr. Bright died recently, at 68. Bright and Gladstone differed in one important particular. Bright never took any decent care of his body. On this subject, Mr. Gladstone says: "Bright did nothing he should to preserve his health, and everything he should not. If he had only been wise, and wise in time, there is no reason why he should not have been alive to-day, and hale and strong; but he would never listen to advice about himself. I used to advise him as the one panacea for preserving his health of body and mind, never think of political matters in bed, or on awakening in the morning. As for myself, in the most exciting political crisis I dismiss current matters entirely from my mind when I go to bed, and I will not think of them till I get up in the morning. I told Bright this, and he said, 'That's all very well for you, but my way is exactly the reverse. I think over all my speeches when I am in bed, like Sancho Panza.'" Gladstone's habits are worth noting. First, he believes in plenty of sleep. "Seven hours I always take, and often eight. The latter I much prefer."

General Beaver, Governor of Pennsylvania, is another instance of the good effect of sufficient sleep, and of the benefit of observing the laws of health. Whether as a soldier, lawyer, or governor, he says, "There is one rule that I have always adhered to: when a boy the importance of securing eight hours' sleep out of every twenty-four was rigidly impressed upon me by my mother, and I have lived up to it ever since." If he fails to secure the full quota one night, he adds to the next night's rest whatever he lost the night before. Like Gladstone, he always leaves his business at his office, and never lets politics or law interfere with his sleep, or mar the enjoyment of home-life.

These and other striking examples might be cited to confirm the importance of our subject. But, say some, we are accustomed also to take and enjoy our midday nap; to all of these let me suggest the following for your consideration:

"Perchance, should some one crave a midday nap  
From habit—then, 'twill cause him less mishap.  
But let none sleep soon after having fed,  
Nor long, and always with uplifted head.  
To point these rules, 'tis fitting to rehearse  
To him who sleeps, this rude, untutored verse.  
Post-prandial sleep, ye mortals, put afar  
In any month whose name includes an R;  
Post-prandial sleep's alone salubrious  
In months whose names their ending have in US."



But some may inquire and be anxious to know how long to sleep. We will give the following as a very proper and necessary rule: Up to the 15th year most young people require ten hours, and until the 20th year nine hours. After that age every one finds out how much he or she requires, though as a general rule, at least six to eight hours are necessary. Eight hours' sleep will prevent more nervous derangements in women than any medicine can cure. During growth there must be ample sleep if the brain is to develop to its full extent; and the more nervous, excitable, or precocious a child is, the longer sleep should it get, if its intellectual progress is not to come to a premature standstill, or its life cut short at an early age.

Again, do we fully appreciate the value of sunshine? Sleepless people — and there are many such — should court the sun. The very worst soporific is laudanum; the very best is sunshine. Therefore, it is very plain that poor sleepers should pass as many hours of the day in sunshine, and as few in the shade, as possible. Many women are martyrs and they do not know it. They shut the sunshine out of their houses and their hearts; they wear veils; they carry parasols: they do all that is possible to keep off the subtlest and yet the most potent influence which is intended to give them strength and beauty and cheerfulness. Is it not time to change all this — to get the roses and color in the pale cheeks, strength in the weak souls? Too many are pale and delicate. They may be blooming and strong, and the sunlight may be a potent influence in this transformation.

Are there many dyspeptics? Follow these plain rules as aids to digestion:

1. Proper selection of food.
2. Best treatment of food as regards cooking, flavoring, and serving.
3. Proper variety of food, with occasional change of diet.
4. Moderate exercise; warmth, and a genial state of mind.
5. Sufficiency of sleep.
6. Pleasant social surroundings at the table.
7. Thorough mastication.
8. Regularity in eating, and proper intervals between meals.

Did you ever hear anyone wishing to possess self-knowledge sufficient to solve the problem, *How to keep young?* To all we would recommend the following valuable suggestions:

- Keep cool.
- Sleep abundantly.
- Eat when you are hungry.
- Don't worry about growing old.
- Think "good morning" every sunrise.
- Become interested in some one beside yourself.
- When a bit of fun presents itself, enjoy it.
- Interest yourself in music.
- Do the work of to-day without fretting about that of to-morrow.
- Shoulder your own responsibilities.
- Don't worry over your neighbors' curtains or clothes-lines.

Do the members of our school boards and architects possess and show sufficient knowledge as to the heating and ventilation of our school buildings? The indifference to their sanitary condition has gone too far, and a severe measure should be adopted to put a stop to this criminal negligence. There is no reason why a school-house should not be built as perfect in sanitary appointments as any dwelling, and there is no excuse for its not being kept in as good repair. It shelters a larger family than any dwelling, and the condition of labor at study imposed on pupils demands a greater care as regards health than is needful at home. So general has

become this neglect, and so common is it to the towns scattered through the country, that a State law should be enacted governing this important matter, prescribing rules for building and maintaining school-houses, declaring what officers shall be responsible for the same, and providing penalties for the neglect of duty. The health of children and teachers is important enough to demand the most strict observance of the laws of hygiene in the construction and care of school buildings, and the proper authorities should enforce every measure provided.

A very partial acquaintance with the human system will convince honest inquirers that it was never intended as the receptacle of alcohol or tobacco in any form. The former is a fuel to benumb and consume the vital forces; the latter is a narcotic poison, to impair digestion and affect the nervous system. Alcoholism in progenitors will produce physical and mental degeneration in their descendants, and all the neuroses that arise from a defective nerve organization—epilepsy, corea, paralysis—and all grades of mental degeneration, from slight enfeeblement of intellect to insanity. Statistics fully confirm the expectation of these entailments. Worse even than the number of drunkards they can point to an inebriate ancestry, is the fact that so many have inherited a weakness of will and a diminishable power of resistance in the presence of temptation. There is an undermining of the foundation, an impairment of will-power, and so a loss of that true stamina of character which imparts a perfect mastery of self. Hence it is, that in no ordinary sense is the use of ardent spirits the concern of the State and of the whole people, for our peace and our prosperity, our civilization and nationality, are involved both in the present and in the results entailed to future generations.

As to the effects of tobacco, I will cite briefly but one touching example. It is a letter written by a wealthy and educated mother, and is as follows:

"May I give my recent experience of tobacco-smoke? It may be a warning to others. I have one child, a little girl not two years old, who was as healthy as the birds when she was born. For more than a year past, ever since she was old enough to be less in the nursery and more with her father and me, she has ailed mysteriously. I could not say she was ill, yet she was hardly ever well. I was in a perpetual state of anxiety about her. The symptoms were absence of appetite, complaints of sickness of stomach, and digestion out of order.

"Last August I took her to a country town, where we stayed two months. After the first week, she flourished like a green bay tree, ate and drank, and laughed and played, and slept and kept me forever busy enlarging her garments. I brought her home rosy and robust. In one week all her old symptoms reappeared—loss of appetite, dark lines under the eyes, listless ways, restless nights. Some one suggested that the neighborhood did not suit her; and I was cogitating how to take her away again, when she caught a severe cold and was confined to her room for three weeks. She recovered her health completely. Appetite, spirits, sleep, all returned. It could not be the neighborhood. After her cold, she joined us down-stairs as usual two or three times a day. In less than a week, sickness, etc., returned. I was in despair. For nearly three months I racked my brain about drains, wall-paper, milk, water, sauce-pans, any and everything in vain—the child slowly wasted. The weather was too severe to take her away. In agony of mind, I noticed one day that so far from outgrowing her clothes, as I expected, they were too large for her. The little thing was not eating enough to keep up her strength, and we could not coax her to eat. Yet she was not really ill; she ran about and played in a quiet way, and looked fairly well to those who had not seen her more robust.

"Suddenly my husband was summoned into the country. A week after he went, she began to eat with a relish. In a fortnight she was her own happy self; full of riotous, childish spirits. 'Her father has never seen her like this,' I remarked one evening when she was particularly merry and bright; and then the truth flashed upon me: it was his tobacco that upset her! He has been away now for a month, and the child's limbs daily grow firmer and sounder; and she is the merriest, healthiest little mortal possible. He always smoked after breakfast and after lunch, with her in the room, neither of us dreaming that it was injurious to her. But for his providential absence at this time, it would never have occurred to me, and we would have lost our darling, for she was wasting sadly. It was acting like a slow poison."

Another fact: It is reported from reliable authority that ten out of twenty candidates for cadetship at West Point were rejected on account of "tobacco heart," brought on by cigarette-smoking.

One more startling truth: Regarding the deleterious effects of tobacco on the youth, the *Health Journal* says that in an experimental observation of thirty-eight boys of all classes of society and of average health who had been using tobacco for periods ranging from two months to two years, twenty-seven showed severe injury to the constitution and insufficient growth; thirty-two showed the existence of irregularities of the heart's action, disordered stomach, cough, and a craving for alcohol; thirteen had intermittency of the pulse; and one had consumption. After they had abandoned the use of tobacco, within six months one-half were free from all their former symptoms, and the remainder had recovered by the end of the year.

Before passing from this subject, I wish to call your attention to the fact that through the efforts and influence of this State Sanitary Association, the State Legislature at its last session passed the following law:

"AN ACT PROHIBITING THE SELLING, GIVING, OR FURNISHING OF TOBACCO, OR OPIUM, OR OTHER NARCOTICS, IN ANY FORM, TO MINORS UNDER SIXTEEN (16) YEARS OF AGE.

*"Be it enacted by the Legislature of the State of Kansas:*

"SECTION 1. That it shall be unlawful for any person or persons in this State to sell, give or furnish any cigar, cigarette, or tobacco in any form, opium or any other narcotic in any form, to any minor under sixteen (16) years of age.

"SEC. 2. The violation of any provisions under this act shall constitute a misdemeanor, and any person found guilty thereof shall be fined in any sum not less than five (\$5) dollars, nor exceeding twenty-five (\$25) dollars for each and every such offense.

"SEC. 3. The provisions of this act shall not apply to the sale of any narcotic made upon the prescription of a regular practicing physician.

Approved February 27, 1889."

It is our duty, and it should be our privilege, to see that this law is strictly enforced. Mothers, fathers, save your boys from this blighting evil. So instill self-knowledge into their young minds and hearts, that they will forever shun and hate it in all its forms, as they would the deadly viper. It is my honest conviction, and I believe I also express the sentiment of this intelligent audience, when I say, I hope our State Legislature will also set the world the admirable example of classing tobacco with alcohol and malt liquors, and pass a prohibitory constitutional amendment, and thus say to the other States and the National Government, we lead in all moral reforms; follow our example. I expect to see the day when public sentiment will demand this action, and then the law-makers must obey.

How deficient generally is self-knowledge, in reference to the condition of wells or water-supply, the cellars, ventilation and drainage of our homes. Bearing directly upon this line of thought, the following letter is not only appropriate, but equally instructive. It is not proper to state the name of the author, nor his residence; but I assure you it was not written either in Lawrence or Topeka. It is plain that the health officer has been in that locality. It reads thus:

"DEAR SIR—I write this with the feeling of the deepest pain harrow in my innards. This pain is caused by an article what I've jest read in your valuable paper. You hav bin sayin hard things of us honest and hard-workin folks what are tryin to earn sumpin by keepin summer boarders. Now, I don't want to say no hard things myself, but the fact is, you doctors think you know too much. Now, I'd jest like to know how long you've been in the bizness of keepin summer boarders. Most likely, you haint never kep none, and yet you think you know more about it than a practicle man what's had twenty years experience. That wud be jest like you city folks.

"Fust, you say that it ain't healthy to have hog-pens, barnyards, and sich clost to the well. You say it ain't good for the drinking water. Mebbe you wont believe it, but what I'm goin to tell you is true. My grandfather lived to be eighty years old, and he lived all his life in this very house, and that was fore the barnyard and hog-pen was moved to war they air now. Bot maybe you city folks thinks eighty years aint long enough, and youd like to live to a cupple er hunnerd. I dunno. Shoudlent wonder. When city folks cums in the country thar aint no telling wat they wont expect, and that's a fact.

"The truth is, hog-pens and barnyards have an amazin good sanitary effect on water. They makes it twiste as nurrishin as it would be without em. Perhaps you city fellars don't know it, but thar aint

no place about a farm whar the grass grows as thick an strong as about them very places. It stans to reason that wots good fur grass is good for critturs, human or otherwise, but you city doctors dont seem to have no reesonin faaulties.

"Then again you say in another place thar's toads in the well. So there be, an' I don't argee it. But so fur from doin hurt, them there critters sweetens up the water wonderful. This is shone by a little pease er poetry what wus learned me when I were yung:

If thars toads in the well  
Thar wont be no smell.

"Now I wont deny that a lot er my boarders wuz took sick last summer, but that wuz cause they would lay on the grass in the orchard on sunshiny days, and they sot out on the front porch after dark, singin 'Baby mine.' I says to em, says I, 'You'll get the fevernager if you set out thar,' says I. Sez they to me says they, 'Rats,' says they. Wall, they took sick, and went and blamed it onto the well-water, an that thar swamp down in the holler back er the house, zif that had anything to do with it.

"We country folks is pooty well used to bein abused by city folks, but as Shakspeare sez: 'Its a long worm what knows no turnin'; and I feel like as if I'd reached the turnin point."

You are familiar with the moral decalogue, and believe that its teachings and principles have accomplished grand results for us as a nation and a commonwealth. Now I wish to proclaim and enforce a sanitary decalogue; and assure you that its diction and precepts are admirable and valuable; and will urge you to give diligent heed, while I present it, and be convinced that a strict observance of its truths will lead us to a higher and nobler conception of the importance of self-knowledge. It is as follows:

#### TEN HEALTH COMMANDMENTS.

1. Thou shalt have no other food than at meal-time.
2. Thou shalt not make unto thee any pies, or put into pastry the likeness of anything that is in the heavens above or in the water under the earth. Thou shalt not fall to eating it or trying to digest it. For the dyspepsia will be visited upon the children to the third and fourth generation of them that eat pie; and long life and vigor upon those that live prudently and keep the laws of health.
3. Remember thy bread to bake it well; for he will not be kept sound that eateth his bread as dough.
4. Thou shalt not indulge sorrow, or borrow anxiety in vain.
5. Six days shalt thou wash and keep thyself clean, and the seventh thou shalt take a *great bath*, thou, and thy sons and thy daughters, and thy man-servant and thy maid-servant, and the stranger that is within thy gates. For in six days man sweats and gathers filth and bacteria enough for disease; wherefore the Lord *blessed the bath tub and hallowed it*.
6. Remember the sitting-room and bed-chamber to keep them ventilated, that thy days may be long in the land which the Lord thy God giveth thee.
7. Thou shalt not eat hot biscuit.
8. Thou shalt not eat thy meat fried.
9. Thou shalt not swallow thy food unchewed, or highly spiced, or just before hard work, or just after it.
10. Thou shalt not keep late hours in thy neighbor's house, nor with his cards, nor his glass, nor with *anything* that is thy *neighbor's*.

Now I wish to present some facts that may eradicate false impressions that may exist in the minds of many as to the office and province of sanitation. There is an opinion prevailing, to the effect that sanitary science causes more harm than good by its influence on the general mind, causing a diseased imagination by constantly reverting to the causes of sickness; that the study of hygiene as the science has produced it, tends to increase ills by inflaming rather than decrease them by instructing people how to avoid disease. Those who present such views are mistaken regarding the office of sanitary science. Its province is not the field of medicine and the at-



tendance of the sick, but its labors are put forth in the broad fields of health, preserving their beauty, fertility and purity. It does not go about with a medicine case, feeling the pulse of mankind, and measuring doses for all the ills with which man imagines he is afflicted, but with a spirit of health and hope, its office, like the sun-beam, is to gladden, revivify and purify the earth, and cheer and brighten the habitations of men. It is not to teach man the nature and miseries of disease, but the happiness and comfort of health. It is not to show man his decay and death, but his growth and life; it fills life with hope and scatters about it the clean sword, sparkling water, pure air and the gracious sunlight, and leads man to meditate upon health and forget disease. It is simply the science of cleanliness, the purification of the elements with which man comes in contact. It simply removes the obstacles out of Nature's way, that her forces may be pure; it removes the filth which man has created, that he may become clean; it surrounds him with an atmosphere of cleanliness and healthfulness, and fills him with a sense of right living. Thus man, conscious of having obeyed the laws of health, cannot but feel better and happier; and sanitary science, instead of bringing disease to his mind, gives it health, purifies life, and glorifies existence.

We do not know with certainty how long life may be prolonged, but we are sure it may be extended much beyond its present limits, and with a fair degree of usefulness. It is believed that its normal limits are about one hundred years, instead of about forty years under the most favorable conditions, as at present; it is quite probable that sixty or more years should be attained by the best use of the means now known: that is, the average should be sixty or more years. With a better understanding and more faithful observance of health laws, forty additional years should be reached. This obedience to law, this adjustment of surroundings, and regulation of our whole being of mind and body, in accordance with the conditions of physical health, will prove to be the only true elixir of life. The future is full of hope.

Let us all work together and we can do much even now, and in doing what we know, we shall find other ways to do still greater things. So shall we lengthen the cords and strengthen the stakes of the great tent of life, under which the story of distress and wail of bereavement shall become ever less and less; while in swelling chorus shall be heard through the ages the laughing of children, the sweet voices of young men and maidens, and the strong words of old men and matrons.

In conclusion, let us strive to attain unto the highest point of sanitary science; to cultivate a practical knowledge of the laws of health; to use every available means that will advance true womanhood and manhood; to acquire self-knowledge; and in all the walks of life, whatever our calling, whether in the shop, office, or college; in the hut or mansion; with the sick or the healthy, may we never forget the inscription on the Greek temple: "Know Thyself."

The last paper of the evening session was as follows:

#### WHAT OUR SCHOOLS MAY DO FOR SANITARY SCIENCE.

BY MISS SARAH A. BROWN, OF LAWRENCE.

The following passage occurs in "Looking Backward" in regard to the education of the twentieth century: "I was most struck with the prominence given to physical culture, and the fact that proficiency in athletic feats and games, as well as in scholarship, had a space in the rating of the youth. The faculty of education is held to the same responsibility for the bodies as for the minds of its charges. The highest possible physical as well as mental development of every one is the double object of a curriculum which lasts from the age of six to twenty-one. The mag-

nificent health of the young people of the schools impressed me strongly, as I compared these stalwart young men and fresh, vigorous maidens with the young people I had seen in the schools of the nineteenth century."

I know of no more pleasing sight than that of a person of perfect physical development, with graceful carriage, free, elastic step, and the buoyant spirits which result from health and strength. But there is something more to be thought of than the mere beauty of such development. There is such a close relation between the moral and mental and physical faculties, such an inter-dependence the one upon the other, that perfect health is absolutely essential to the best moral and mental results. There is a Sandwich Island proverb, "If strong be the frame of the mother, her son will make laws for the people." If we would acquire mental and moral superiority as a nation, we must lay the foundation in physical culture.

In speaking this evening of what our schools may do for sanitary science, I shall take the ground that whatever we do to improve the health of the school children, and whatever we do to instill into their minds true hygienic principles, is done for sanitary science. First of all, then, the conditions of health should be considered in the construction of school buildings. One of the most difficult of practical questions is that of proper ventilation, heating, lighting and furnishing of school-houses. In the old-fashioned country school-houses, with the great, awkward, rusty stove in the center of the room, and the wide cracks at windows and doors, ventilation took care of itself; and on a cold winter's morning there were two constant counter-currents of young humanity, one towards the red-hot stove, and one away, and nowhere could be found a comfortable "temperate zone." With increased intelligence in regard to building and increased wealth for carrying out sanitary plans, school-houses have greatly improved, and oftentimes they stand conspicuous, the handsomest building in the village or town, the pride of the inhabitants. Still, it remains a fact that I seldom go into a school in the middle of the forenoon or afternoon that I do not perceive the foul air which comes from imperfect ventilation and from a want of cleanliness resulting from ignorance and poverty. Of scarcely less importance than ventilation and heating is the proper lighting of rooms. Windows should be so placed that the light should come in from the side. Care should also be taken that blackboards are not used to such an extent as to injure the eyes. The great increase of near-sightedness in school children is said to have resulted in a measure from the greater use of the blackboard of late years. It is imperative that all these matters receive careful attention, and no economy in any of these directions is excusable. I rejoice in the improvements in desks, and that no longer the little ones in the primary schools have to sit with feet dangling, but with seats suited to their small stature they look the very pictures of content. Having looked well to the construction of the building and to its furnishing, we are ready to enter upon the school work.

Recognizing that the best results are obtained where all conditions are made pleasant, and that love of work is the strongest incentive to its accomplishment, we would have flowers and pictures, sunshine and gladness everywhere. There should be order, neatness, and beauty. The teacher's desk should have a pretty cover. The whole atmosphere should be as near as possible like a pleasant sitting-room, for the mind has great influence over the body, and many an unruly girl or vicious boy will be brought into harmony with the regulations of the school-room merely by being brought into the influence of a pleasant environment. The magnetism of a strong, cheerful, self-controlled and self-contained teacher will have a marked effect upon the pupils. Every teacher of any experience knows that she can often trace an unruly, noisy day in her school to the fact that she herself is weak and nervous, not at her best; and the pupils, as sensitive to all changes in her manner and voice as to those of

cloud and sunshine, or of differences of temperature, reflect her condition. It is important then that the teacher be full of strength, health, and magnetism, and no one who has not a good physical constitution and sympathy for children and love for her work should be allowed in the school-room. Music and calisthenics should be as much a part of the daily program as arithmetic or geography. I place music among the aids to physical culture, not alone because singing expands the lungs, but because it has a direct influence upon the mind, and a happy song will often set the blood flowing and start the life forces and make the child healthier and happier through this spiritual power. Calisthenics do not occupy the prominent place they ought. A writer in the *Atlantic Monthly*, some years ago, said:

"The one drawback to satisfaction in our public-school system is the physical weakness which it reveals and helps to perpetuate. One seldom notices a ruddy face in the school-room without tracing it back to a trans-Atlantic origin. A teacher in a large school in Canada went so far as to declare that she could recognize the children from this side the line by their invariable appearance of ill-health joined with intellectual precocity, stamina wanting, their place supplied by equations. Look at a class of boys and girls in our grammar schools: a glance along the line of their backs affords a study of geometric curves. You almost long to reverse the position of their heads, as Dante has those of the false prophets, and thus improve their figures; the rounded shoulders affording a vigorous chest, and the hollow chest an excellent back."

We trust the case is not quite so bad, especially here in our free Western country. Still I hope I may live to see the day when gymnasia will be found in all our cities and towns, and when we shall have professors of physical culture as much as of Greek and Latin, whose duty it shall be to look after the health of the children; who shall understand the weak tendencies of each pupil, and by proper movements and exercise be able to remedy them. Then there shall be classes of those who are hollow-chested and weak-lunged, and they shall be made strong; classes of those who are round-shouldered, and they shall be made straight; and no boy or girl shall be sent to a school where there is not just as much care taken to develop his body so that he shall be strong, vigorous, handsome, and graceful, as to develop him mentally, and then vigor and health will be the rule and not the exception among men and women alike. I wish right here that I could put in a plea for good, genuine, rollicking out-of-door fun for our boys and girls, who are too apt under our present social and educational system to become merely little old men and women. I would we had time for some of the good, old-fashioned athletic games and sports—a little more of the spirit of that old New England schoolmaster who was remembered as granting half-holidays unasked, for no other reason than that the skating was good, and the boys must use it while it lasted!

A great step forward was taken when the study of physiology was introduced into our schools. It has had to encounter much opposition from ignorance and superstition, and it took long for people to learn that the proper study of mankind is man; that there is nothing impure in the human form divine. But the opposition and prejudice have gradually been overcome; and to-day it is very generally taught. This result has been largely brought about through the exertions of the Women's Christian Temperance Union, who have insisted upon scientific temperance instruction, and now thirty-four States require their public schools to teach the effect of alcoholic drinks, stimulants and narcotics upon the human system. Miss West says no other teaching except that of the traditional "three R's" is made obligatory in so many schools. This temperance instruction has opened the way for more extensive study of physiology, and the prejudice is gradually dying out, though we occasionally hear of those even among educated men, who feel as though it were not quite the thing, and that at least young ladies should not be made to teach anatomy. There can be little doubt that the effect of this study will be seen in the improved physical development of the next generation, and that a

higher moral tone will result from more temperate habits. The importance of this study is certainly not less than that of numbers, and it ought to begin in our primary schools with oral instruction, in the same way that arithmetic does, and to continue through the higher grades and in the university.

Within a few years it has been found that the habit of using tobacco has increased among school children. I think four per cent. of the primary boys in this city were addicted to its use, and a much larger per cent. in the higher rooms; so that last year our Legislature passed a law making it a crime to sell or give any to minors—but as yet I hear of very few cities where the law is enforced. That it is injurious, mentally and physically, seems to have been proved beyond doubt. The Belgian Government instituted an investigation into the cause of the prevalence of color-blindness, which became so widespread that it was a serious hindrance in cases of employes who needed to distinguish color signals, and the unanimous verdict of the experts making the examination was, that the use of tobacco was one of the principal causes. The French Government instituted a thorough examination of the schools of Paris to ascertain the effect of smoking upon scholarship. The committee reported: "Smokers have proved themselves in the various competitive examinations far inferior to the others." In an examination for admission to the Free College of New York, out of 900 girls examined, 71 per cent. passed, while of the boys only 48 per cent. passed; and the teachers ascribed the difference to the fact that the boys used tobacco and the girls did not.

Miss Mary Allen West, a teacher of much experience, and for years a county superintendent, from whom I obtain these facts, asks, "Has this anything to do with the fact that so many more girls than boys graduate from our high schools?" May it not account in measure for the fact that life insurance companies have found that woman's chance of long life is greater than man's, and so that they can insure for a smaller rate? This I am told to be a fact.

Dr. Willard Parker testified that tobacco is ruinous in our schools, dwarfing mind and body.

Dr. H. H. Seerley, Principal of the Iowa State Normal School, gives the following:

"After making a study of several hundred boys, running through a period of ten years, I give only observed facts, and neither assume the conditions nor jump at foreordained conclusions.

"1. Boys that begin the habit at an early age are stunted physically, and never arrive at normal bodily development.

"2. Accompanied with the use of the narcotic were certain disordered physical functions, such as indigestion, impaired taste, defective eyesight, dull hearing, nervous affections, and diseases of the heart. I have not found a single case of early addicting to the habit of tobacco-using that did not suffer with one or more of these direful abnormal conditions.

"3. Tobacco, used in any form, destroyed the ability to apply oneself to study, and prevented his comprehending or remembering his lessons. The mental faculties of a boy under the influence of the narcotic seem to be in a stupor, and since depraved nerve-power stultifies and weakens the will-power, there is but little use for the teacher to seek to arouse the dormant, paralyzed energies, or to interest or foster the fagged desire. I have not met a pupil that is addicted to the habit who will go through a single day's work and have good lessons. I have never had one whose scholarship record was good, and in almost every case the deportment was below the standard. At the regular examinations for promotion, nearly every one of the tobacco-using pupils fails in doing the most reasonable test-work, even if this is not the first time the work has been passed over in class. I have had numbers of cases in which they have remained in the same grade for four successive years, and then they were not ready to be advanced into the next higher class."

It has been stated that no one has ever received the highest honors at Harvard who has been a user of tobacco.

If such are the effects of tobacco upon our youth, it is important that the law preventing their obtaining it should be enforced. This is not difficult to accomplish where public opinion is educated to desire it.

In one city, the superintendent of the schools visited all the tobacco dealers per-



sonally, showed them the law, and talked with them in a friendly and frank way in regard to enforcing it; and the result was that they not only promised to observe it, but have since heartily coöperated with him in detecting ways in which boys have procured it, and together they have succeeded in enforcing the law.

There is an evil connected with our public schools which I wish to speak about this evening, because it is a very serious one, and yet one which it is exceedingly difficult to reach. In our schools, children come together from all classes of society; from refined and cultured and pure homes, and from those of the ignorant, low and degraded, and the influence of one impure, vicious child can contaminate a whole school. Is it strange that many a mother looks with fear and trembling and offers up a prayer for guidance, as she sends her little son or daughter from the refinement and protection of the home to the public school? The question of purity is one of right thinking. A writer on this subject says:

"To the exalted mind, the impure is as repulsive as the deformed, and instead of furnishing a temptation gives a shock. The less one thinks of it the less one is tempted, and as the pure are averse to thinking of it, virtue furnishes its own protection. The tendency to think of the impure is itself impure and leads to further impurity. The interests of virtue do not require that men think so much of unchastity, the first rule of the upright man being to give no more attention to it than is necessary. As thought soon turns to feeling and feeling to conduct, the paradox of purity is that the less you entertain it, the more you have it, excluding its own consideration."

The way then to keep children pure, is to keep their minds from impurity, yet the indecent and obscene pictures and writing which are found in nearly all the out-buildings on school premises make this impossible, and may well make one feel in the face of it all, that the good which the child gets is over-balanced by the evil. This is a subject which for many years has engaged my attention, as it must that of every one who is interested in school work, and I have often felt almost like despairing before the solution of the problem of how to reach it; and I should not bring it up here this evening, had it not been lately demonstrated to me that there is a remedy, and that it ought to be known and applied everywhere. Emporia has a school board and a superintendent who are thoroughly awake to the enormity of this evil of obscenity, which is sapping the virtue and the health of our children, and they set about in earnest to eradicate it. The consequence is a state of things which is most satisfactory. I visited all the school premises in the city, even the ward schools, where many of the children are colored and which have been the hardest to reach, and everywhere I found them, as regards neatness and sanitary conditions, almost perfect; and only once did I find a mark of any kind on the walls, and that evidently had been recently put there, and was in chalk. This very unusual and satisfactory condition was brought about through the wise and unremitting care of the superintendent, sustained by an intelligent and appreciative board of education. The teachers are all persons of the highest character, who are working with the superintendent in this direction. The janitors are carefully selected and instructed, and it is especially their duty to look after the out-buildings, to keep them in the best sanitary conditions in regard to cleanliness and the use of deodorizers, and if any writing appears it is immediately reported, and measures resorted to to discover the writer; and in every case the superintendent has been successful, and the boy or girl has been personally interviewed and prevented from repeating the offense. This careful training for a number of years has so created a public sentiment that for a year past there have been few occasions for reprimanding any pupil for any misdemeanor of this kind, and an infringement of the rule is pretty sure to be from some one who has come from some other city and who is therefore easily detected.

I hope an equally good showing can be made in other cities, but this is the first

case I have been made aware of, and I greatly rejoice to find that such work is possible. After accepting the invitation to write this paper, I wanted to visit Topeka and other places and find out what they had done in this direction, but I could not. A friend who visited one city reports both the sanitary and moral condition of things there appalling. I myself took pains last week to go over our own city, hoping that in a university town like Lawrence, where we boast of our schools, I should find something to be at least not ashamed of; but with two or three exceptions they were in a very bad condition, and parents who have never looked into this matter would be shocked to know to what influences their boys and girls are subjected. But one successful effort of this kind makes all genuine efforts possible of success, and I hope we shall be able to purify the moral atmosphere of our schools after this.

There are one or two other points that I wish to touch upon before closing. I think the tendency in our schools is to crowd too much. If children work faithfully six hours they ought not to be required to study out of school. Eight hours is a very bad condition, and parents who have never looked into this matter would be shocked to know to what influences their boys and girls are subjected. But one successful effort of this kind makes all genuine efforts possible of success, and I hope we shall be able to purify the moral atmosphere of our schools after this.

Again, I wish to enter my protest against the system in vogue in so many places, of making tardiness the crime of all crimes. The success of a teacher is often made to depend upon her record in this respect. It is a false and artificial standard, and often leads to much that is evil. In one city I visited, a quarter-holiday is given in any room where there is no tardiness during a certain time. The result is, if any child is late he immediately returns home or else plays in the street until recess, when he is marked absent a quarter of a day. "What would happen if you should go in late?" I asked of a bright little boy. "I wouldn't go," he answered. "All the scholars would be angry, and we wouldn't any of us go in if we were late." Now the effect of this is demoralizing, and it is injurious to the health, for it keeps the child constantly in a worry; fearing they may be late, they eat hurriedly and in a state of nervous excitement. In almost all cities it is the same: any child would much rather be absent than tardy. Some time ago a little girl from the country attended our city schools, and her parents brought her in each morning; once it rained, and she was a few minutes late; it was not in the least her fault, probably not her parents'; for such things are not always to be prevented. When she went into the room the children were allowed to stand and point their fingers at her. What an ordeal was this for a sensitive, conscientious child, and what a lesson of cruelty for the others! Said a little girl with an emphasis which was not to be mistaken, "I would rather die than be tardy." A little girl of my acquaintance was devotedly attached to her mother. Being in moderate circumstances, the household duties were performed by themselves. One morning the mother was sick, and all the cares fell upon the little daughter, who did the work cheerfully and prepared for school. But a last little service of love was rendered the mother which should make her comfortable for the forenoon, and the little one started for school, to find herself late. Now was not this lesson of womanly tenderness and love of more value than a week's school work, and ought we by any system to allow the loving kindness which shall so truly fit for womanhood to be turned into bitterness? I know the argument that only thus can we reach the parents and make them understand the necessity of punctuality, and it is to be acknowledged that most of the cases of tardiness come from the carelessness or ignorance of the parents. But I maintain that parents can be reached without doing wrong to the moral and physical health of the child. In one city, a child is suspended from school who has three half-days' absence in the month for any other cause than for sickness, and two tardinesses count as an absence. In order to be reinstated, the parent goes to the superintendent and promises greater care for his child in the future. This gives the superintendent an opportunity to

talk with the parent; to give his reasons for demanding punctuality; the parent sees the necessity, and is made to coöperate with the superintendent in securing it. This seems to be by far the most sensible, the most humane and the most satisfactory way of dealing with the matter. It takes from the teacher all temptation to deceive; it reaches the real difficulty instead of necessitating a falsehood which is perfectly palpable to every one; and it places the whole matter on a par with other offenses and does not magnify what may not even be a fault into an unpardonable sin, thus blunting the child's moral sense.

There are other points I should like to speak about, but time forbids. Some of those already touched upon may not seem to have a bearing upon the subject, but as we no longer inquire what temperance may do for our schools, but rather what our schools may do for temperance, so it has seemed to me we are doing what we can for sanitary science, when we form habits of neatness, order and healthful living, and instruct in the principles of hygiene; for in a very few years these miniature men and women will carry these habits and principles into the homes which they will be making for themselves.

The convention then adjourned until the next morning.

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## SECOND SESSION.

LAWRENCE, December 5, 1889—9 A. M.

In the absence of Judge Hindman, the convention was called to order by Prof. F. H. S. Snow, one of the vice-presidents. Prof. Snow presided during the remaining sessions of the convention. This and the subsequent sessions were held in Snow Hall, University Building.

The first paper of the morning session was by Prof. E. H. Bailey. Prof. Bailey prefaced his paper by saying that the paper is two-fold; the first part being prepared by himself, and the latter portion by Prof. Blake.

### WELL-WATERS OF THE CITY OF LAWRENCE, KANSAS.

BY PROF. E. H. S. BAILEY, OF THE STATE UNIVERSITY.

It is a well-known fact that the well-water of some of our larger cities and towns is very liable to pollution. These wells may be polluted by the surface-water that gradually finds its way into them, carrying with it all the slops and filth that accumulate in the back yards and about the door of the kitchen, or they may be polluted by deeper veins of water that filter from cess-pools, sewers, or imperfectly constructed drains. A well is simply a hole in the ground into which, as to the lowest point in the vicinity, all the water will trickle, and carry with it whatever impurity it meets in its course. It is a mistaken notion to suppose that the water will purify itself by running a few feet or yards through the ground. It is true that by the process of oxidation there is this tendency, but after a few years the soil becomes saturated with filth and will no longer remove the injurious matter. The case is precisely similar to the use of a charcoal or sand filter for a series of years. We all know that the material of the filter must be frequently renewed or the filter is of no value.

I need not refer to the danger that attends the use of water from wells in thickly-populated districts, nor to the special danger in times of epidemics of any of the so-called preventable diseases, that find the best soil for their propagation in filthy air and water. The use of such waters invites the spread of the disease. Our lit-

erature is so full of such instances that it would be useless to mention any particular cases.

The city of Lawrence is no exception to the general rule. The soil is porous enough to let the water in, and it will soon create for itself subterranean channels. It was not our purpose to examine a large number of the wells of the city, nor to make a complete report on the water-supply. A few of the wells were examined with the view to find out if the waters were contaminated by their surroundings. The business portion of the city extends south on Massachusetts street four or five blocks. In the northern block, the slope of the surface is towards the river; in the other blocks the slope is towards Warren street, the fourth street from the river. Samples of water have been taken from different wells on each side of Massachusetts street, in the first four blocks south of the river. The water was taken at a peculiarly favorable time to show the water at its best, as no rain sufficient to soak the ground had fallen for six weeks. These waters have been examined by the method in use among chemists, for free and albuminoid ammonia, and chlorine, there being the indications of the presence of organic matter, both of vegetable and animal origin, and of other ingredients. When free ammonia, which in itself is of course harmless, is found in water, it points to the probable pollution of the water by animal refuse, or by water leaking through a cess-pool, or from a stable or closet near the well. If, on the other hand, much albuminoid ammonia is found, it denotes not only impurities of the former class not fully oxidized, but it denotes impurities of vegetable origin. There may be exceptions to these deductions, but a careful examination of the surroundings will usually explain them.

Your attention is called to the analysis of the water of six wells, situated as follows. The results are expressed in parts per million parts of water:

	I.	II.	III.	VIII.	VI.	IX.	Cistern before rain.	Cistern after rain.
Free ammonia.....	.020	6.100	.400	.012	.104	.008	.054	.480
Albuminoid ammonia,	.040	.142	.092	.050	.142	.030	.102	.236
Chlorine.....	172.200	223.400	311.600	481.700	645.700	307.500	.....	.....

No. 1 is on the east side of Massachusetts street, the fourth block from the river. It is in the rear of a livery stable, 30 feet from a manure pile, and is usually surrounded by puddles of stagnant water at a distance of ten feet. The water is said to be largely used for drinking purposes, by several families. This water is not shown to be impure by the analysis, as is the case with some other samples examined; the accidental imperviousness of the soil at present keeps the extract of the manure pile out of the well.

No. 2 is in the third block south of the river, on the east side of Massachusetts street. The yard around the pump is filthy, and there are closets not over 25 feet away. The analysis shows this water to be simply horrible. It is little better than dilute sewage. The well should be condemned. Such water, if it does not cause diphtheria, typhoid and similar diseases, puts the system in a condition to receive and grow the germs.

No. 3 is a very deep well on the east side of Massachusetts street, the first block south of the river; out-house 30 feet distant; surroundings clean. Water had on the occasion of our first visit a very disagreeable odor. It was turbid. The analysis shows this water to be dangerous. It is probably much worse at some times than at others. It had been repeatedly cleaned, but this had not improved the odor.

No. 6 is on the west side of Massachusetts street, the third block from the river. The yard is clean. The water is not always clear, and is infested by numerous



worms. It is very largely used by the people who live near by, and at the restaurants. This water should be looked upon with suspicion. It should be carefully watched to see the effect of rains upon its quality.

No. 8 is also on the west side of Massachusetts street, in the fourth block from the river. The surroundings are very filthy; kitchen slops in various stages of decomposition lie around the yard. Out-houses are 30 feet distant. This water, although containing much salt, is not at present very impure, but may at any time become so.

No. 9 is on the west side of Massachusetts street, in the fourth block from the river; the well is about 30 feet from out-houses. There is but little filth in the yard. The water is largely used. The well is probably on the lowest ground of any examined. It is not far from No. 8. This water is not at present of bad quality, but Prof. Blake has something to say of this, especially.

From observations that I have made on the well-waters of this section, I should say that they ought not to contain more than .05 of free ammonia and .13 albuminoid ammonia.

In many localities, the determination of chlorine is a very valuable aid towards proving the purity or impurity of a given sample. In this vicinity I confess that I have not dared to fix a standard, as the amount is so various. I presume in deep wells there is enough of the salt in the soil to render this determination of little value. Usually if much chlorine is found, that points to the presence of common salt from closets, cess-pools or other sources of filth. It will be noticed that the amounts vary from 172 parts in No. 1 to 645 in No. 6. It is true that No. 1 is situated where there would be but little contamination except from the stable, and No. 6 on quite low ground in an unfavorable locality.

In the table the analysis of some cistern-water, under different conditions, is given. This is to impress the fact that waters are liable to become foul if the wells or cisterns are so situated as to receive surface drainage. My attention was called to this particular cistern because typhoid fever broke out in the house adjoining and spread very rapidly through the whole household. The first analysis showed the water to be a fair article, but in a few days, a rain having meantime fallen and washed the surface of the ground into the cistern (as an inspection of the locality showed), the water was of a very dangerous quality.

The fact that those waters that have been found bad or suspicious, are so designated because of the amount of free ammonia present, and not on account of the albuminoid ammonia, indicates that the impurities are of animal origin. In our rich prairie soil the albuminoid ammonia is frequently high, and surface-waters, as brooks and rivers, often partake of this character. Our streams often contain so large a quantity of organic matter as to render their use dangerous, or as to increase the tendency of the user to malaria and similar disorders. This is probably due, not to any sewage or refuse that has been discharged into them, but to the natural drainage of a rich, nitrogenous soil.

We hope to have the opportunity to test these wells again when the conditions are such as to show a marked change in the character of the waters; and would emphasize the fact that a well-water in a city is liable at any time to become impure and dangerous.

#### A SPECTROSCOPIC METHOD OF DETECTING SOURCES OF WELL-WATER POLLUTION.

BY PROF. LUCIEN I. BLAKE, OF THE STATE UNIVERSITY.

The present paper has been prepared with a view of describing a simple and inexpensive method of determining whether stables, out-houses, cess-pools, or any other sources of filth which may be in the immediate neighborhood of a well, drain

into it. In a common porous soil like ours, surface filth may penetrate to underground water, and thus in the course of time travel a considerable distance, and reach a well quite remote. This fact is well known. But it is always uncertain how far such travel may extend. The varying circumstances of soil, slope and rock, depth of well, etc., allow no general rules. Usually we cannot say whether the contents of our own and our neighbor's stables, privies and cess-pools are communicating with the waters we are drinking.

The eye or the sense of taste are no reliable testing instruments, for the clearest, most tasteless well-waters may yet be solutions of the contents of cess-pools and out-houses, as shown by Prof. Bailey's analysis.

Several methods have been tried to detect a possible communication with our wells. A solution of analine colors has been poured into the neighboring cess-pools or other suspected sources of pollution, and after a few days the well-water has been examined by the eye for color. Again, a half-bushel or so of salt has been employed to be thrown into the filthy places, and then the sense of taste called in to detect its presence in the well-water; but the amount of salt required is excessive, and the unreliability of the sense of smell renders the method unsatisfactory. I am not aware of any method at once simple and reliable. Chemical analysis, as you have seen, will detect the presence of polluting matter, and thus indirectly suggest its source. But chemical analysis requires an expert, and is a matter of considerable expense. It occurred to the writer to employ the spectroscope, and in conjunction with Prof. Bailey's work, the following method has been developed:

A solution of chloride of lithium, prepared from the carbonate by treating with hydrochloric acid, so as to contain about one part in a hundred, has been poured into any suspected source of pollution in the neighborhood of a well, as a cess-pool, out-house or stable, and after a week or so some of the well-water has been examined in the usual way in the spectroscope. You are all aware that by means of a spectroscope, every metal will give one or more bright bands for its spectrum, and these are further characterized by a definite and unchangeable *position* in the spectrum, as shown in this diagram.

The process of analysis becomes then very simple and expeditious. It is merely to search for a colored band and to locate its position in the spectrum. The question naturally arises, can *minute* quantities of the substance be thus detected? Prof. Roscoe states that sodium can be detected when less than  $\frac{1}{180,000,000}$  of a grain is present, and lithium when less than  $\frac{1}{40,000,000}$  of a grain is in solution.

The delicacy of the spectroscope thus exceeds that of the chemical tests. Indeed by it several new metals, as thallium, indium, rubidium and cæsium have been discovered.

For the purpose in hand, then, the filthy back alleys along Massachusetts street in Lawrence were visited, and the wells just described by Prof. Bailey were then exposed to the lithium test. I have hesitated somewhat about presenting the results, because the method was devised but a brief time ago, and no rain has fallen here for some six weeks. The unusually dry soil has been unfavorable; and the few days that the solution has been in the suspected sources of pollution may not be sufficient for it to have percolated through into the wells.

In one well, however, I have discovered the lithium, and this one fact is sufficient to establish the correctness and success of the method, and this paper is presented in the hope that others may apply the method. The well in question is No. 9 in Prof. Bailey's table. It is situated back of Gosline's grocery store, on Massachusetts street, and the lithium solution was poured into the privy, twenty feet away. The conclusion is now unavoidable that the privy drains into the well, where the water

is in daily use by several in the neighborhood. Later experiments will be made upon the other well-waters.

In conclusion, it is possible that this spectroscope method might be employed to determine how far sewage is carried in our rivers; or might detect the leakage of sewer pipes, or prove the intactness of cisterns, or the connection between underground springs and rivers.

These papers were both very beautifully illustrated by their authors. On motion, they were received, and the following discussion followed:

MR. WOODWARD asked whether any other salt than lithium will answer for spectroscopic test.

PROF. BAILEY replied that they used the carbonate; but the sulphate will probably answer as well. The solution however is cheap for the quantity required.

PROF. SNOW said that we owe our present immunity from typhoid fever to the clay sub-stratum. By-and-by, however, the clay will be penetrated by the poisonous sewage matter and surface filth, and all wells become contaminated. Prof. Snow gave the following rule of distance that any deposit of decaying matter or cess-pool or other objectionable matter should be from a well:

Two feet for every 1 foot of depth of well in clay soil.

Five feet for every 5 feet of depth of well in sandy soil.

This rule, however, cannot be considered absolutely safe under all conditions. It is better to secure greater distance from any possible contamination.

MR. SPANGLER said he had noticed that on the north side of the river one well would seem to be clear, and another near by would have bad taste, and show deposit and scale. The indications were traced to deposits of rotten wood, decayed leaves, etc.

The next paper was as follows:

#### UTILITY OF BOARDS OF HEALTH.

BY J. MILTON WELCH, M.D., OF WICHITA, MEMBER OF THE STATE BOARD OF HEALTH.

On hearing one say, "Things grow," we give but little heed to the expression, and pass it by as a very ordinary remark. It is often used, no doubt, more for the purpose of keeping the current of conversation unbroken than for the purpose of conveying information. Indeed, so common is the expression, that if we think of it at all, we think of it as implying vacuity, rather than pregnancy of thought. But on holding attention to the thought contained in the expression until its meanings, its bearings, its relations, come slowly but clearly into mental view, we find, before we are aware, that we are transported in thought into another world — into a world where all is growth. Continuing our mental concentration, we discover that instead of expressing the contents of an empty mind, it really expresses a fundamental truth running through the activities of the universe, and controlling not only its formation, but the formation of all orders of beings from animalcule to man, as well as of sensation and thought.

Thus often is to be found, bound up in our common words and expressions, more of philosophy than we had dreamed of.

What is true of our idea of growth in general, is true of all classes of institutions which have arisen in society, or been established for the better realization of life in a state of civilization. Governments have taken their rise in small beginnings, grown into strength, power and influence by gradually extending their borders or working an internal structural complexity; and it may be by both of these processes going on at the same time that greatness has been reached. Churches have likewise had their rise, development and establishment. So also with schools and other institutions incident to a high civilization. Civilization itself has sprung from a seed which was planted deep down in the soil of superstition, ignorance and barbarism; and is itself one of the grandest illustrations of the universal law of growth.

Growth then being a law, by which things come to be what we see they are, it would be a little singular if the organization of the laws which govern health and the measures for sanitation should be an exception. And, on a very superficial examination, the fact that this is so will be apparent. A brief mention only of a very few modern sanitary measures will be attempted. But fortunately in this age of public schools and newspapers and free institutions, there exists no special demand for an extended discussion of the importance and utility of boards of health or hygienic ordinances; for everyone must be persuaded in his own mind even before I begin. I must bespeak your indulgence in allowing me to wander along in an unmethodical way and deliver my thoughts as they had come to me.

People in all ages have thought more or less of the protection of health. Usually those thoughts have been confined to considering the health of the individual, or of the family of which he was a member. As an instance of the importance to which the subject is entitled, that was accorded to sanitary measures, may be mentioned the ancient Jews. Of all the nations, perhaps, their health laws were the most complete and effective. They had, at least, one advantage in securing their observance over that possessed by peoples of modern nations, and that was a belief that Moses received them direct from the Lord; and hence their loyalty to the author of their deliverance insured the observance of all laws pertaining to their welfare. Those laws have had a far-reaching authority and influence, both in time and in space. That influence has reached our time, and those laws are still accepted as the code of sanitary ethics by the descendants of the people who received them from Moses. And what has been the result, the benefit? To-day no people on the face of the globe are more healthy. Who ever hears of a Jew being sick? Do their children die? In a community of Jews, if he wanted to make an honest living, a doctor would have to learn some other trade.

If other nations had enacted laws for the guidance of the people in matters of health, they had been allowed to pass into disuse before there had been established national characteristics of bodily vigor, which should be felt in distant times and on the shores of new worlds. And thus it has ever been with peoples and nations, with the bare exception of the Jews, to forget and neglect that which is of vital importance. As the history of mankind had its dark ages, so the goddess Hygiea was forced to abdicate her throne of perpetual youth and allow it to be desecrated by passion, plague, and pestilence, for ages.

The pestilence tore the innocent babe from its mother's arms, and the hungry jaws of death crushed its life out. Epidemics and plagues dug graves for the young and middle-aged alike; for none reached the limit assigned of old. None thought of controlling disease or of modifying its ravages, but interpreted its afflictions as the visitation of a displeased Providence. People sank into indifference, became despondent and courted death; and in stolid despair they waited till the wrath of an



avenging Providence should be appeased before they could hope for a suspension of the ravages of the angel of destruction. So went the world until within a comparatively brief period. As the dark ages receded before the march of civilization, the goddess of Health, though chained by the Janus-faced demon of Disease, infused a restless spirit into her disheartened, puny, feeble, lawless and rebellious subjects. Their restlessness grew into discontent, and a disposition to listen to her teachings began manifesting itself; and overtures were actually made for her release from bondage. She came at last in the form of an angel of mercy to a modern army in the person of Florence Nightingale. She established a system of military sanitation in the English army before Sevastopol. An army had been destroyed by disease—cholera, I believe. Another army was sent to take its place, into which she had introduced her hygienic measures. The result was that the last army was freed from sickness and death to a degree lower than would have been visited upon the men had they remained at home in England. Thus it was demonstrated that disease may be prevented by the observance of the laws of health. And this was done in such a way as to arrest the attention of those in authority. It demonstrated the relation of sanitary measures to disease. This lesson, taught by a woman—in herself an efficient board of health—under adverse circumstances, was heralded abroad, echoed and reëchoed from country to country the “glad tidings of great joy” that the goddess of Health had returned to earth “with healing in her wings.” The English people, being more immediately interested in this beneficial interference, were not slow to accept the lesson and profit thereby. They enacted laws creating health officers, not only municipal, but national, and empowered them with authority for the suppression of disease. The time allotted for this paper forbids a detailed discussion of the various measures adopted for the control and suppression of preventable disease, thus reducing the sick- and death-rate in England. But I may be permitted to present some of the results, mere mention of which will be sufficient to show the utility of such officers and measures.

The facts seem to be common property of sanitarians, and I am not able to give credit always to the proper authority. But as the object is not so much for the information of sanitarians as to help the people appreciate the worth of hygienic measures, the less need will there be for citing the sources from which material has been drawn. For it is the people after all who must become interested in order that the benefits may be of worth. As Lord Derby has said: “No sanitary improvement worth the name will be effective, whatever acts you pass, or whatever powers you confer upon public officers, unless you can create an intelligent interest in the matters among the people at large.”

Some of the earlier rewards, after sanitary measures had been introduced into England, were so encouraging and so directly traceable to the working of those measures, that it became a matter of general interest. In the old filthy town of Salisbury, during the nine years preceding the introduction of these improvements, the death-rate had been 27 to the thousand of its inhabitants, and for the nine years just following such introduction, the death-rate was 21, a saving of six lives in a thousand. In Cardiff, the mortality was reduced from 33 to 20, a saving of 13 lives in every thousand. In Newport, from 31 to 21—10 lives saved in a thousand.

These improvements were begun in 1853, but in 1872 to 1875 important changes were introduced, and additional powers were conferred upon health authorities in both city and country districts. From the report of the Registrar-General for 1883 may be gleaned some favorable results traceable to these changes. In the five years following 1875, the death-rate in England and Wales had been reduced to a lower figure than had been usual; and for the next three years—’80 to ’83—reached a point lower than had ever been known.

Yet there are people who seem to think that sanitary measures and health officers are expensive luxuries. Well, who ever heard of a cheap luxury that was worth anything? But when their pigs have, or are even threatened with, the cholera, or their calves have the murrain, or their sheep the "scab," their purses stretch out a good deal longer than the moral law.

But in London the results of those improved sanitary measures had been more satisfactory, because of the greater disadvantages on account of greater density of population, which increased from 1,948,417 in 1841 to over 4,000,000 in 1885. If, under these circumstances, which are unfavorable to the larger place, the mortality had remained stationary, it would have been, as one has said, a "sanitary triumph." But it is even better, for, from 1840 to 1849 the death-rate in London averaged 25.3; and for a few years just before 1885, it had been reduced to 20 to the thousand. Five deaths to the one thousand saved do not seem to be many; but in the aggregate the number is immense, as will be seen by finding how many thousand there are in 4,000,000, and then multiplying the quotient by five. It at once becomes astounding. It amounts to 20,000! 20,000 preventable deaths! And in one year! Saved to the state, at the money value, which is \$795, placed on the life of every man, woman and child in England, those 20,000 lives would amount to the enormous sum of \$15,900,000. The loss of such a sum, when added to the value of the time lost for nursing and funeral expenses, becomes absolutely irreparable. Who can estimate the value of human life in dollars and cents! But this is not all. It would require for a comfortable resting-place for the dead, allowing 4x6 feet space for each grave, eleven acres of valuable land to be withdrawn from other uses. But instead of being lost, it is what had been saved to England through the efficiency of modern sanitary officers, backed by wholesome laws. This represents the saving of one year only.

Let us make another comparison of the London of 250 years ago with the great city of to-day. The population of London then was about half a million souls. The death-rate was 80 out of every thousand of its inhabitants, each year. The average duration of life was not to exceed 25 years. Now, what were some of the conditions that contributed to this fatality and abbreviated length of life? Without specifying in detail, let it be understood that some of those conditions were filth, bad ventilation, crowding together in small apartments like pigs in a sty, polluted waters, etc., etc. Having never been taught to fear the consequences of violated organic laws, their habits were anything but sanitary; and as a result of their surroundings and the carelessness of personal habits, the people became enervated, sluggish, and unable to ward off disease. No doubt they had thus lived for generations. Under the devitalizing influences of such environments, they were not only not capable of maintaining health in their own bodies, but incapable of transmitting unvitiated organisms to their children.

Such conditions made the city "happy hunting-grounds" for the germs of contagion and pestilence. They invited the "plague," that blighting curse of health and happiness, and the destroyer of public prosperity. The invitation was accepted, and like a demon, fierce, unrelenting, ravenous and devouring, it swept down upon the city in furious haste, and in one short night 3,000 victims lay at his feet, cold in death. Nor did he halt, but with filth-seething breath did the death-dealing monster scatter pestilential poison abroad, slaughtering old and young alike. For fifteen long years did this work of destruction go on, till nearly 7,000 of the population died annually. Nor were the ravages stayed till there had been numbered among the victims no less than 100,000 lives.

Had people understood sanitary laws and obeyed them in those days, would anyone now say that it would not have been different with them? There may be people who believe that all such calamities as the plague are direct interpositions of

an interfering Providence, and who would not do anything in the way of preventing his plans, lest a greater calamity befall them. Believing that pestilence follows close on the heels of violated law, enlightened people now accept no such antiquated opinions. They maintain that London might have escaped her great calamity had she adopted the sanitary measures which have for several generations been modifying the habits and conditions of the people of that great city. Under the influence of those measures and those now in operation there, the length of life has increased from twenty-five years to thirty-seven years; while the death-rate per one thousand of the population has been decreased from eighty to twenty. That is, while four died some two hundred years ago, but one, in an immensely increased population, died in 1883. But the conditions brought about by modern sanitary measures make the difference even greater than the figures, four to one, show. Then the population was comparatively sparse, both in city and country; while to-day it is dense. The thousand-and-one things in a great city, too numerous to attempt to mention here, all tend to count against the present, and in favor of the city of two hundred years ago. If it were possible to invest the city of to-day with its more ancient environments, the difference in the death-rate would be shown to have increased in favor of the city where modern sanitary measures are enforced; and instead of four to one, it would be four to less than one. Add to this that other benefit claimed, that the length of life has been increased from twenty-five to thirty-seven years, and we have something worthy of the consideration, not only of the sanitarians, but of every man, woman and child who values the increase of health and the lengthening of life.

But may all this be claimed as a result coming from observance of the laws of health? Evidently the greater part of it, if not all, has come from the better obedience of the laws of organic life. But may not some benefit have been derived from the infusion of foreign blood brought in by immigrants? Perhaps. But even that blood must have been kept up to a healthy standard by paying due respect to those same laws.

But the growth of modern improvements for the promotion of health has not been confined to London, or England. It has extended to other countries, where it has stimulated a desire to do something to prevent disease and death. In this country it has taken deep root, and from the indications, is destined to work great benefits not only to the individual States, but to the Nation at large. Nearly all the States have created health boards that are more or less efficient as they have been invested with authority to carry into operation measures thought to be sanitary.

As an illustration of how the people of a State may suffer in consequence of having no health board to look after and check contagious diseases on their approach or invasion, may be mentioned Florida, one of the few States in the Union that had thought State Boards to be "expensive luxuries" and of no practical utility. Could Florida have foreseen the dire calamity that awaited her, she would no doubt have "put her house in order" instead of furnishing another example of the folly of allowing the thief to pillage the house and carry away the valuables before locking the door.

But the sanitarian does not feel that his duty is all performed when he has recommended and caused to be enforced measures for the actual prevention of a high death-rate. He is desirous that the people shall obey the laws of health, not alone to prevent premature death, but that they may enjoy life and prosperity. The working ability of the people, their enjoyment of comfort, the happiness of vigorous life, and the satisfaction flowing from anticipation of long life: all are promoted by observance of the laws that are called sanitary. If the people could be persuaded to live as they should, they would very much oftener be permitted to

enjoy the companionship of those who have acquired wisdom through the experience of many years. They might then contemplate how they might be appreciated when they grow old.

Let us for a moment give attention to old age, and how life passes away. How beautiful is old age! "The hoary head," says the wise man, "is the crown of glory." And again, "The beauty of old men is the gray head." The young and middle-aged alike strive to do homage to the aged. Little children are never happier than when gathered about the knees of the gray-haired sire, listening to stories of long ago; or helping grandmother find her spectacles and adjust them. Who ever saw an indignity offered to a benignant old person? The sentiment of reverence wells up in the breast of everyone for the old. Wherever we go, in car or coach, on street or highway, at church or public hall, at political meeting or Sunday-school festival, considerate attention is always paid to the hoary-headed sire and silvery-haired matron.

And why is this deference so universally accorded to the aged? Is it not that we instinctively pay this homage to one who had discharged the duties of life, and contributed all there was of that life to the bettering of the world? Lives of such are perpetual benedictions. But how have they lived, and what has enabled them to attain great age? They have lived long and well, because they had inherited organisms of well-knit fiber, strong and healthy, which had enabled them as they went along to adjust those organisms to the varying and shifting conditions of seasons and climates. They have obeyed the laws of organic life. But, if through ignorance or accident, they may have at times violated those laws, the well-derived capital, inherited from a long line of vigorous ancestral manhood, had enabled them to pull through the sloughs of feebleness, ill-health, and disease, without suffering permanent damage or tainting their blood. They have done nothing to taint the virtuous blood pulsating through their entire being, blood that took its rise far back among the ages in a pure fountain, and though hemmed in by thorns and thistles of disease, it wended its onward flow through the generations, touching each with health and vital tenacity, till it reached them. Adding their own contribution of healthful integrity, they pass it on uncorrupted to engender lilies of health and to become rivers of longevity to the remotest generation. They have grown old because they had been started right; born with the right kind of blood; born with a *trend* in the right direction, and which they continued to follow. And these things tell in the life of all organized beings—from monad to man.

Having thus lived, how do such as have thus been blest in life, die? One who has lived, in fairly good health, to old age, dies by degrees—not as one in youth or middle age dies, in consequence of a vitiated constitution inherited or caused by his own violations of law, or by some accident which could not be foreseen and provided against or evaded. Indeed in a sense, he may be said to begin to die when he passed over to the western slope of life. At this time waste and repair, perhaps, first begin to show some want of balance, waste gaining somewhat on that of repair. The body, by degrees, loses that suppleness which it possessed in youth. In consequence of a progressive sluggishness of the circulation of the blood, the senses one after another become blunted. The sight, perhaps, is the first to show signs of failing; then hearing is muffled. The sense of touch may next show a tardiness to respond to the more delicate contacts; and smell may now begin to fail to enjoy the more delicate odors. And taste loses by degrees its early sensitiveness. As time moves on, the brain loses little by little its activity. Imagination wanders less, and memory retains less easily, except what was trusted to it in early life. Muscular fiber is no longer so active, and movement becomes measured. The voice becomes feeble, and utterance slow and trembling. But these are not lost suddenly, but go on by



insensible degrees. While these bonds of an earlier life are weakening and fading, nutrition, assimilation and other functions of the organic economy are still going on, though less actively; for they partake of the same loss of vital activity. Digestion languishes; the secretions dry up; capillary circulation is clogged; the larger vessels in their turn lose their elasticity, and the heart-beats are weakened and retarded.

Thus the descent from life to that "bourne whence none return" is made by easy and gentle degrees. As it progresses, the lungs lose in a measure their power to make that exchange of carbonic acid gas for oxygen, leaving more of the former and taking up less of the latter, that is so essential for the maintenance of strength and activity. As the blood retains more of the poisonous gas, and being circulated less energetically when it reaches the brain, the nervous tissues are oppressed and cease their activity and the mind in consequence becomes sluggish. The person yields to the benumbing influence and loses the lively interest in passing events which had once been taken. As the days go by, perhaps months or even years, this obtuseness becomes more profound, and the old silver-haired veteran approaches his last end without a pain of physical suffering, or a pang of remorse or dread of the hereafter. Nature having furnished and administered the appropriate anesthetic, he is indifferent now to all that once gave enjoyment to life, and he passes insensibly through the *intervale* that lies between *now* and the *hereafter*. He now sleeps in peace! Nothing will disturb him more! We leave him there!

"The individual who falls into the sleep of eternity" under the series of such slow and gradual steps, dies without "consciousness of life" and "no consciousness of death." "He passes insensibly from one to the other, and to die thus is to know no pain."

But what can there be in this to interest the sanitarian? There are a good many questions involved that, if explained, would help people to appreciate the utility, the worth, of hygienic measures, if they so desired. But whether they will, is quite another thing. One of the things implied is the fact that some people do live to the ripe old age of 70, 80, 90, or even a hundred or more years. The fact that they do live thus long indicates that they are in possession of something, or that they have done something, or left some things undone, that has enabled them to lengthen out their lives. It indicates that they are in possession of something not possessed by those who succumb to disease while infants, or at farthest at middle life. Had they not possessed it, they had died somewhere between *birth* and the time when old age overtook them.

It is to find out what this something—this secret—is, that the sanitarian is devoting his energies—and to make it available in the promotion of health and the prevention of disease. But he has found out that, in itself, there is not so much of a secret after all. The real secret lies in a different direction. It is not so much ignorance of what has enabled one to live long as it is carelessness, indifference, negligence, on the part of those who might, if they would, add months or years to their lives.

The fact that some people do live long also shows that the worth of an organism is always tested by the amount of vital tenacity which it has inherited. Then the health and longevity of anyone depend upon the hereditary capital stock of vital energy which he has received from parents, plus the observance of the laws of health by himself.

All-important as this subject is to the individual, it is no less so to the State and Nation. To be *born* right and to *live* right are great essentials in any attempt to banish unnecessary suffering, preventable disease and premature death from the land.

In any scheme for the bettering of the health of the people, there must be included

some consideration of the laws of heredity; and before any adequate or complete formulation of sanitation can take place that will be of permanent worth, a knowledge of these laws must be acquired as of primary importance and worked into that scheme. It will be useless to go to making rules and regulations for the government of the invalid, unless parents be taught how to bear children that will not grow up into invalids. That is, no permanent benefit to the State or Nation will come.

Sanitary work must reach down and struggle with disease at its foundation. It might *now* be a delicate subject for a sanitarian to say that this or that person shall not marry, or assume the responsibilities of parenthood, but the time is coming when the States and Nation will demand this of him. At the high pressure of nervous excitability incident to the struggle for wealth that seems to possess the American people to-day, there is danger that they will become permanently weakened in the course of a few generations. When this time shall have arrived, our children will have cause to censure us for our want of forethought, and for our neglect of duty toward them, if we fail to probe the cause of disease to its core, and "nip it in its bud." We are wont to declaim in praise of our free institutions, of our public schools, of our happy homes, of the health of our citizens, of our great resources, and of the glorious inheritance of political and religious independence, bequeathed to us by a hardy race of Puritans; but shall we pass these great inheritances on to the next generation of invalids, made so by our want of forethought or carelessness?

If we feel any interest in the welfare of our children's children, we must do what we can to give them healthy bodies; for without health they will be unable to maintain this glorious nation and these free institutions against the encroachment of enemies from without. Are we not fostering a nervous irritability that is sapping the fountains of bodily vigor? Do we not as a nation place too much stress upon mental capability and not enough on the organic capabilities? Are we not separating the mind too far from the body, and thus weakening both? Is not the tendency towards separating the being into two entities, strengthening into something like it was in the early ages? The knowledge which we have of tradition as transmitted to us from the early ages, is that man was considered two, instead of as one. The ancients, having the notion that man was double, that the mind and body were independent existences, held that these two different entities should be esteemed of different worth. The one was spiritual, the other material; the "mind pure, immaterial; the body gross, corrupt." No terms were too exalting to express the praise of the one, while the vocabulary might be exhausted without doing justice to the degradation of the other. The greatest care was taken for the cultivation of the mind, while the body was neglected. Some went even so far as to inflict actual injuries on the body. It was starved, stripped of comfortable clothing, and went thirsty, in order that it might be a less desirable abode for the devil of superstition. And such ideas held sway for ages. They may not all have been yet banished from the world. But the time is coming when the scientific sanitarian will be heard. His proclamation will resound throughout the nations of the earth, that the soul—the mind—is of little worth in this world, except that it be united with a vigorous, healthy bodily companion. Seek not to destroy the body that the soul may live, but cherish it *that* it may live.

Under these inherited conditions one sees the great difficulty to be overcome, before any reasonable observance of the laws of life can be expected. But we live in an age in which the mind, more nearly in accord with the ancient demand, has stepped out from its fetters of superstition and asserted its superiority—a superiority never dreamed of in the days of arrogant assertion—over the forces of nature. It asserts that these forces shall be the servant, not only of the mind, but also of the body. The mind is more active to-day in pushing its questioning of nature, than

ever before. It rests satisfied with no supernatural interpretation or hypothetical imaginings or dogmatic annunciations of infallibly obtained truth, but goes humbly before the great universe and reverently petitions for unadulterated truth. Generations after generations have succeeded each other. Each generation has received from the preceding one certain peculiarities as their inheritance of the ages which have gone before; and each has added peculiarities of its own, born of its own environments. These it transmits, along with those it had inherited, to succeeding generations. The older inheritances are the more stable in proportion as they reach back in time to the ancient environments; and they are most worthy of preservation by virtue of having withstood the environments of ages, and maintained their existence through all the struggles that have made them what they are.

Our bodies have bound up in them, in many instances, two sets of inheritances. One tends to the preservation of the health; the other destroys health. One would prolong life to ripe old age; the other would cut life short. These two factors of the life we know are possessed in varying degrees by different individuals, and by the same individual at different times or ages. Both are inheritances. One has been established in the organism by the ability which the organism has acquired by long struggle, to balance the forces with which it has had to contend all along the journey of its ancestors. It has been able to maintain its integrity. The other condition may have been established in any generation as a result of individual carelessness, ignorance, or of accident; or it may have been received from ancestors, who had been unable to establish a healthy state of constitution in consequence of unfavorable circumstances, and thus become weakened and diseased, and their children have to suffer for it; and if not checked and controlled, may cause the extermination of that strain or family.

Diseases established generations ago can be prevented only through parental influence; and then only through the most careful hygienic living, it may be for generations. The most that can be done for the individual who has inherited ill-health is mitigation—not a radical cure.

But each generation may so live, if it is not a perfect wreck from inherited disease, as to transmit an added vigor to its successors. Hence the need of the individual to observe the laws of health.

In morals it has been accepted as a truth worthy to be heeded, that the way to train up a child is in the right, that when he is old (I would substitute older) he will not depart from it. There is evidently a vein of philosophy underlying this statement. Physiologists teach us that the doing of things till a habit is formed is but wearing channels or ruts through which nervous energy flows more readily and with less friction than it would through unfrequented routes, or in the direction in which no broken channels lay. So the reason why a person, brought up in the "straight and narrow path" of morality, will not depart from it, is because the nervous energy, having learned that path, follows it rather than some other.

So in hygienic matters. The sanitarian, knowing the vast distribution of disease, the insufficiency of medical treatment, the ignorance of people concerning that which concerns them most, their indifference and carelessness to the laws of health, is not only seeking to discover and to apply prophylactics for the prevention of disease, but he is striving to teach people to apply those prophylactics themselves. He would have every man, woman and child in the land not only know what the laws of health are, but he would have them apply them to maintenance of health in their own bodies. He will never be content nor cease his efforts for the full indoctrination of every one in these matters, till children are brought into this world with constitutions able to compete with their environments, and then taught, not only as a matter of knowledge, but as a daily habit, that their bodies are worth taking care of

for their own individual comfort and happiness and for transmittal untarnished by disease and with full measure of vital energy to their posterity, which are its due. The sanitarian will insist that children should have the laws of organic virtue so instilled into their habits that it will be easier to obey than to disobey the demands of right living. The rule that is thought to be of such inestimable worth in training to the observance of moral rectitude, is of no less transcendent worth in the matter of organic uprightness. And why should we not expect its observance to be as effective in establishing right organic lives as right moral lives? A physical law will apply here as well as a moral one. It is said, and I suppose it is true, that motion follows the line of greatest traction, or of the least resistance, or of the mean between the two. Now if a child be trained in doing right in matters of health and is kept at it until a habit is fully established; and if it is true what the physiologist teaches, that the routes of nervous discharge will be along the line which it is accustomed to and most familiar with, then those actions which are the results of such nervous discharges will be along the line of least resistance. When a habit is formed, it is easier to do a thing in the way in which that habit was formed than to do it in any other way.

Establish in children a habit of doing what is right and healthful, then it will be easier for them, when they grow older, to obey the laws of health than to disobey them; for their action will be along the line of least resistance. Their action would give them ease and comfort. A child that has always been required to wash its face in the morning will not feel comfortable if such ablution has been neglected. If it has been taught to avoid green apples, it is not apt to indulge an appetite that has not been perverted; and so with almost all the things that injure or destroy health.

The scientist, though engaged in investigating the laws of life, will not, or is apt not to allow himself to be deflected from his pursuit for the purpose of illustrating its bearing upon the laws of health. There are illustrious exceptions, however, and in them we find worthy promoters of the cause of sanitation. This has given rise to what might with propriety be called a new profession. Members of this profession are not usually scientists in the sense of devoting their time to original investigations, but they are educated and are able to appreciate such facts as the scientist furnishes. Taking the results of the original investigations, they study the nature of the facts, observe their relations to the processes of life, and make a practical application of them to the welfare of the people.

Again, the physician being devoted to the study and cure of disease after it has once taken hold of a person, has but little time left, or inclination, after attending to his arduous duties, to transform himself into a sanitarian. Loss of sleep, facing storms, swimming streams, plunging into snow drifts, pulling himself out of mud-holes, worrying over delirious patients, watching by the bedside during weary hours, wending his way to distant patients in August with the thermometer 120° in the shade, or in January way down to 40° below in the sunshine; groping his way through devious paths of forest or prairie of a night as dark as *sheol* without a lantern, often having to leave his horse or vehicle in order to see, or *rather to feel*, whether he is in the path or not; or traveling by the lightning's flash, going so far as he can see the way, then waiting, patiently waiting, in pelting rain and furious wind for another flash of the electric spark to light up another abbreviated section of road lying in advance, undistinguishable from the unutterably utter darkness—these are things ill-fitting a physician for a calm and deliberate study of the methods of preventing disease—preventing that upon which he *thrives*, if it can be said that a doctor thrives upon deferred payments.

But the sanitarian steps in here and lifts from his overburdened shoulders the responsibilities growing out of a demand for hygienic knowledge, and supplies it



to the people whom the physician most desires to see benefitted by prophylactic measures. And in doing this, he benefits not only the people, but the physician. He helps the physician by rendering mild many diseases that might otherwise have been severe, epidemic or malignant, through the loss of vital energy in his patients, caused by violated sanitary measures. But it is the people always that engage the attention of the sanitarian. It is not the individual so much, but the community, the State, the Nation, for which he toils. He strives to have people *born* right, and *live* right, so that they may die as the *old* die—which is not really death, but *going to sleep*. He would banish disease to the shades of oblivion.

The next paper presented was by Dr. Simmons, as follows:

#### SANITARY MATTERS IN DOUGLAS COUNTY.

BY N. SIMMONS, M.D., OF LAWRENCE, COUNTY HEALTH OFFICER.

The subject of sanitary matters in Douglas county having been assigned to me for presentation on this occasion, I will briefly state what has been done, and then outline what remains to be accomplished.

The small-pox visitation of this city in 1883 taught us first, that to dally with such a formidable foe is not only expensive, but extremely dangerous to life; second, that even this virulent disease, when spread among a people, while the most difficult to handle, can be controlled and stamped out with regulations intelligently devised and vigorously executed.

During the summer of 1888 it was reported that small-pox existed at Tonganoxie, twelve miles northeast of here, which caused some anxiety in this city. To ascertain the extent of the danger, I visited that place and found one case, quarantined in an isolated family. Three weeks later, I visited the same family and found six cases of well-defined small-pox, and learned from the neighbors that the quarantine regulations were very imperfect. On returning to this city, I reported the facts to the mayor, who immediately called the attention of the authorities of Tonganoxie to the defects in their sanitary regulations, which elicited an unceremonious reply from the mayor of that town, in which he complained bitterly of the interest the health officer of Douglas county was taking in their sanitary affairs, and threatened to arrest him if he repeated his visits. Whether our efforts had any effect on the result or not, it is gratifying to know that no new cases followed. The blessings to be derived from sanitation in small-pox are perhaps more marked than in any other disease.

During the months of October, November and December, of 1888, scarlatina and diphtheria prevailed in this city. About twenty families in all parts of the city were affected, and twelve or fifteen deaths occurred. At the request of the mayor and local board of health, I visited every residence where the disease was supposed to exist; and where the attending physician had not already instituted proper sanitary measures, I provided for the same. Whether due to these measures or a mere coincidence I cannot say, but the diseases were soon stripped of their virulence, and in a brief period disappeared from the city.

On the 22d of November last, being informed that diphtheria was supposed to exist in Eudora, eight miles east of this city, I visited that place on the same date and found the report painfully true. The children of five different families who attended two or three different schools and resided at considerable distances from each other, being simultaneously attacked, precluded the possibility of all having contracted the disease from the same local source. Perhaps some person who had the disease in a mild form unconsciously communicated it to them. There was one very important question evolved that I determined to solve, if possible. In four of

the families the disease was fairly easy to control, but in the fifth one death had already occurred, after a brief illness of two or three days; while two more, the only children in the family, were struggling in the throes of death, though they had only been sick three days. There was nothing peculiar in the hygienic organization of these children that would cause them to succumb to the disease more readily than other children who were affected. The sanitary surroundings, with one exception, were better than the average; though that exception, in my judgment, was fatal. The water used by them was partly taken from a cistern in which the walls were cracked; within ten feet of this leaking cistern was the water-closet, sitting over an ordinary pit in the earth of but few feet in depth. This, I think, accounts for the extraordinary virulence of the disease in this family.

Diphtheria has appeared in this city in isolated instances, but fortunately has yielded to judicious sanitary measures, so that the city and county, perhaps, have fared as well as any county of the same number of inhabitants in the State. Slaughter-houses and other public nuisances have been investigated, and some of them abated; upon which I cannot now dwell. Suffice it to say that the time and labor I have spent in the performance of these duties have not cost the city or county anything, which may perhaps account for the opposed tardiness and want of interest in looking after these matters.

The physicians of Douglas county, with few exceptions, have manifested a commendable zeal in the adoption of the methods to suppress contagious and infectious diseases, and in a quiet way have doubtless contributed much to the public health. A very limited distribution of sanitary literature in the past two or three years marks the commencement of an era which it is to be hoped will continue until the mass of the people will so thoroughly understand sanitary measures as to be able to disarm all zymotic diseases of their virulence and promptly stamp them out when they invade society.

#### WHAT REMAINS TO BE ACCOMPLISHED.

First of all, as has already been suggested, the distribution of sanitary literature of a practical character through the usual channels, followed with such effective demonstrations in meeting grave emergencies as will convince the most skeptical of the marvelous possibilities which will reward the judicious employment of sanitary principles; now well understood, will be a long stride in the right direction. Higher education should embrace sanitary science as one of its branches; and no teacher should be permitted to engage in that calling until he is qualified to direct the physical as well as the mental culture of those placed in his charge.

With education well advanced along this line, effective laws may be enacted and enforced, and a reasonable expenditure of public funds in the interest of public health tolerated.

Among most thoughtful persons, the mere knowledge of the presence of dangerous elements in the surroundings would guarantee their removal. Unfortunately there are others who will only yield to the enforcement of legislative enactments.

There are perhaps few residences in Douglas county that in all their environments are in harmony with the laws of health. We start in the cellar, and find it contains water and is very damp; or ventilation is bad in another; a horrid stench proclaims the presence of gases arising from decaying vegetables. Again, as dry weather advances and the water sinks in the well close by, the foul water from the cellar finds its way into it. Then we find in another case, all the outside cellar doors and windows are closed, while the door leading into the dwelling remains ajar, thus creating a draft for the escape of the poisonous gases into the presence of the family. Leaving the cellar, this laboratory of evil, we visit the parlor; but before we can view the beautiful paintings, fine curtains, wall paper, carpet, and

elaborate upholstery, the blinds and curtains must be turned aside, and we admit the light and we enter to view and admire the beautiful environments. The doors of the room have been closed against the dust; the windows have been sealed against every ray of light, lest it fade the carpet and bleach the wall paper. The weather has been hot and damp, and as we enter we are almost suffocated with the foul gases with which the air is charged. This room, so tastefully prepared, has become a veritable Pandora's box, filled with the germs of consumption, typhoid fever, and diphtheria. No patient could sustain a capital operation in this atmosphere and survive. Rather let the beautiful colors be bleached, than the cheeks of the residents be blanched.

Closets, trunks, dressers and other places where clothing is stored during hot weather must be frequently ventilated or they will become sources of great danger. Beds and bedding not in use, or confined in close dark rooms, become exceedingly foul and unfit for occupancy. Provisions kept in confined places where mould is propagated are not free from suspicion.

In the dooryard we find pools of slops steaming in the hot sun, or drying up to be dissolved by the first shower and perhaps washed into the well or defective cistern. Perhaps the drainage from the stable or stock lots or the overflow from the water-closet is carried to the vicinity of the well, and if it is permitted to remain there, finds its way through the porous soil into it. The vault in the water-closet may, if not further distant than the depth of the well, communicate with it. In the country and around public wells, stock is often permitted to loiter in their vicinity. Hog-wallows are often seen, and pools for the accommodation of ducks and geese in the immediate vicinity of wells are not rare. Pools of stagnant water are often valued as sources of stock-water supply. In hot weather as these supplies near exhaustion, they teem with malaria, and through the deposit of excrement become filthy and dangerous in the extreme. Milch cows are compelled to drink this water or famish, and delicate children are expected to subsist upon milk derived from those cows. A very unreasonable supposition.

#### DRAINAGE.

In the Wakarusa valley, which traverses Douglas county from west to east, a system of ditching has been commenced, which when completed will drain the marshes and abate the source of malaria in that region. While these ditches are being excavated chiefly for the purpose of increasing the productive value of the lands and improving the public highways, the improvement in the public health will doubtless be of even greater importance.

The Kansas river valley, in Douglas county, contains near a score of marshes. Persons residing in the vicinity of these swamp lands have, in the past, been annually annoyed with malarial fevers. It is believed that a system of drainage could be adopted that would reclaim these lands and enhance their productive value to the extent of the cost of the excavations required; and that these sections would be comparatively free from malaria.

The Miami valley, in Ohio, and the Wabash valley, in Indiana, in the early settlement of those regions, were terribly scourged with fever and ague, but since they have been cleared up and thoroughly drained, these diseases are almost unknown. The same results will doubtless follow in the regions referred to in Kansas.

#### SEWERAGE.

The general good-health of this city, perhaps due to the favorable location and natural drainage, would seem to indicate that we have not heretofore suffered for the want of sewers to any great extent. But as this question is now being agitated, it will be well for the citizens to remember that an imperfect system of sewerage may

become an extremely fruitful source of deadly infection. There can be no more fatal error than to suppose that any kind of underground ditch will answer.

#### PUBLIC BUILDINGS.

The city prison in Lawrence is a nuisance, and ought to be rebuilt, as every principle of *sanitation* is violated in its present construction. The construction of a well-ventilated department for female prisoners in the county jail, in the last two years, is a marked improvement; though the remainder of the prison ought to be reconstructed in harmony with sanitary laws.

There is a decided improvement in the affairs and surroundings of the county poor-house and farm within the last year or two.

The health of the students at Baker University, in Baldwin City, and Lane University, in Leocompton, is reported as being exceptionally good at present.

The environments of Haskell Institute are in good sanitary condition, and but little sickness reported.

The city schools and the State University have less than usual on the sick list this season. The efforts of Professors Snow, Bailey, Blake, and others, in analyzing the water-supply of the city and guarding the sanitary surroundings, it is to be hoped will secure the continued usual good-health of the students.

It is generally believed that some additional legislation is necessary to render the present sanitary laws effective. A faithful effort in this county to enforce the law by the county board of health developed the fact that the penalties were inadequate, and after finding that some prosecutions would be necessary, and no one being willing to guarantee the cost in case of defeat, the matter was dropped; since which no deaths or births, and few marriages, have been reported.

Gentlemen of the convention, while I have merely alluded to what has been accomplished, I think the results of the efforts at sanitation in Douglas county have been so salutary as to warrant increased expense and energy in the supervision of the public health.

#### DISCUSSION.

The following discussion was had, upon the foregoing paper:

JUDGE HINDMAN said that one source of danger to water-supply is the proximity of vaults. It is remarkable that such things are tolerated. He suggested that no private family should have a *vault* on the premises. Earth-closets in some form should be used. The out-houses should be so built that no water need collect in or about them.

PROF. BAILEY said he would insist upon having in houses plenty of air and sunshine. There should be an abundance of these in dwellings, for oxidation and purification.

DR. REDDEN paid a tribute to the labors of the health officers in the State; these labors being rendered either gratuitously or at very low cost. He also gave some illustrations of the peculiar contagiousness of scarlatina and varioloid, through germs remaining in houses not properly disinfected.

PROF. BLOSS, of Topeka, Superintendent of Schools, speaking of the necessity of applying sanitary laws in schools, said that the family which was free from disease was in favor of quarantine and similar measures; but when the family had the disease, it objected seriously to the law. It will be well to push the matter of education in this matter; but for this people



must be compelled to obey the law, both as to notifying of the presence of disease, and also in disinfecting.

The question being asked, How long may the germs of scarlatina remain in clothing and communicate disease? Dr. HASTINGS, of Olathe, gave a history of a case of scarlatina, being that of a small girl. The disease could not be traced to its source. The child recovered. Several weeks afterward a younger child fell sick with it. The house had been disinfected thoroughly, excepting a small closet where were some playthings belonging to the small girl, and these were supposed to contain contagion producing the disease in the second case.

The last paper of the morning session was as follows:

### THE ATHLETIC LIFE OF UNIVERSITIES.

BY PROF. MAX WINCKLER, OF THE STATE UNIVERSITY, LAWRENCE.

The importance of physical development is so universally accepted that it may well be regarded as one of the fundamental principles of our life. It means nothing less than that health, vigor and full activity are the essentials of life. All nations and all ages have encouraged it in their peculiar way, and have made physical culture in one way or another a part of their education. With the barbarian or semi-barbarian, the highest and finest physical development was the very end and aim of his ambition.

If we give a glance to the Northmen who overran Europe and finally conquered the once mighty Rome, we find that great bodily strength and health was the source and secret of their success. If there is any truth to Tacitus' admirable description of the early Germans, it was the free, pure, vigorous physical life of the Teuton which made him such a terrible opponent to the decaying nations of the South.

Among the Greeks, who in many respects attained the highest culture ever known to the world, athletics was one of the most important elements in education, and as much stress was laid upon it as upon the study of literature and music. In fact, there never was a nation which so much admired and glorified physical beauty as the Greek. A man, as the young man Sophocles for example, was actually admired because of his strength and the beauty of his body. The result of this spirit we see in the wonderful productions of art, which even in the imperfect state in which we now find it, never fail to call forth our highest admiration, and serve us to-day as lofty ideals.

But I need not appeal any more to history, for it is an axiomatic statement that strength and health must always go hand-in-hand with the real growth of a nation. And yet, clear as all this may seem, much as everyone will assert to the truth of this position, how few are ready to bring it into practice! Look at our nation! True, we are energetic, active, enterprising, ambitious; but are we not forgetting almost entirely, in the enthusiasm of our work, our bodily needs? It has already been observed by many travelers that we are the most nervous people in the world. In fact, our nerves are always at the highest tension, and the marvelous work done by our people in such a short period of time has unquestionably been accompanied by a great sacrifice of our physical condition. We do not go through life at a quiet, easy, steady pace, but life with us is a desperate race in which all the powers have been stretched to the utmost, and in which many in their eagerness to reach the goal, lose their breath, drop down and die. This very nervousness and restlessness

of our life is the cause why even in our older cities, everything has that one-sided, unfinished appearance. One part of our life and institutions is wonderfully developed, the other woefully neglected. And this sudden development or strange neglect seems almost to be the result of chance, so mild and irregular they are. We are yet very far from that richness and fullness of development which takes into account the many discordant heterogeneous relations of life, and tunes them into a beautiful harmony.

One of the first steps toward the attainment of this ideal is a closer attention to our mode of living. We must learn to look more carefully to the wants of both body and mind; and the best place to begin this work is in our schools and colleges. It is very hard, although by no means impossible, to impress the older portion of the population with this idea. They are engaged in active work, and have acquired by long habit a certain routine, which is very hard to change. The hopeful side of this question rests with the youth of our country, and especially those attending our schools and colleges. Here, I believe, every form of exercise should not only be encouraged, but actually made a part of the work of the students. It belongs there just as much as literature, or mathematics, or the sciences. The success of the latter is in fact so dependent upon the success of the former, that the neglect of one must necessarily produce the weakening of the other. We do not wish to send from our colleges men weakened or broken in body, as is often the case. The hope of the country cannot rest with such men, no matter how fine their intellectual development may be. This idea is gaining ground so rapidly that Harvard College has tried lately to establish the principle, by which no sickly, weak scholar can obtain any prize or scholarship. For President Eliot contends that moneys of the University should be spent on the most hopeful, and hence on the healthiest students, and not upon those whose activity is likely to cease soon after graduation. And so every student who is a scholarship-holder must be examined at least twice a year by the director of the gymnasium, and if his development is not satisfactory, he is reported to the corporation. In this manner Harvard hopes to root out that element of frail, weak, pale students who live only in the world of books.

If then athletics ought to form an essential part of our education, it ought to be reduced to the same thorough system as our intellectual work. A loose system of exercise taken at any time or in any form will not produce the desired results, any more than any such system in our intellectual work would be desirable. We all know that our mind can best be developed by steady, regular, careful training in all directions. We do not say that a little literature here and a little science there, studied whenever an opportunity should present itself, will be of any benefit to us.

From our lowest schools upwards, from our most elementary to our most advanced education, we reduce all our instruction to a most thorough and exact system, and we are constantly straining our effort to improve even upon that. This same idea should prevail in athletics, and it is steadily gaining ground. The gymnasias wherever they exist do no longer offer merely instruments to be used at random, but try to reduce all exercise to a scientific basis. A man is most carefully measured and examined, and then a certain line of exercise is prescribed to him, just as we do with students. A young man in a certain physical or mental condition is only able to do a certain physical or mental work, and it is not until he shows a thorough proficiency in that, that he can do higher work.

As I have remarked above, it is in schools and colleges in particular that athletics ought to be and is now generally encouraged. And here it has had thus far splendid results. For a vigorous athletic life in any college is the most powerful moral factor there. One glance here will suffice to see that abstinence, regularity, modera-

tion, self-conquest, lie at the very basis of all college athletics. Let me be more specific.

In the great colleges of our country where the athletic idea has taken a firm foothold, there are teams of baseball, football, crews, running, boxing, lacrosse, cricket, and what not. As soon as a man determines to join one of these teams, he gives his word of honor that he will abide by certain rules laid down by the association. These rules mean nothing more than the most normal, the healthiest life imaginable. It is almost severe in its simplicity. The candidate must rise and retire at a seasonable hour, take the plainest and most nourishing food, abstain from smoking and drinking, or from any of the more hilarious amusements, which are so common in college life. The life of these young college athletes is so systematic that you can tell almost exactly at any hour of the day where you can find them. The training is by tradition most strictly enforced, although there is no pressure brought upon the men from without, except the word of honor which they have given to the association. I don't think there is any graver offense in college life than the violation of those in training. Even the expression of the slightest suspicion of it is a dreadful insinuation, and if an actual case occurs, the man is immediately ostracized from the society of the students, and disgrace is so great that the memory of it lingers for many years in the college. In other words, a man who joins any of the teams, tacitly takes a pledge that he will be true to his class and the university, and will do everything in his might to bring new victories to his college.

Think what such a continuous four-years training will do for a man at college. This stern and almost Spartan-like life must finally have a very deep effect upon the moral life of the man. The average young man enters a large college at the age of 19 or 20, or at an age when he is most exposed to the divers temptations which fortunately or unfortunately infest our large colleges. If he is so fortunate as to become a member of an athletic team as soon as he enters college, the moral side of his nature is saved. The most common temptations of life are the very ones which he pledges himself to avoid. And it is a terrible struggle which the poor young athlete has to undergo. The brilliant, gay life of the college is constantly before him. Perhaps his very chum is one of these jolly, careless college men, attending theaters, parties, balls, smoking, drinking, gambling, leading a most easy, irregular life; while he, the poor young athlete, with plenty of money, with every opportunity for pleasure, imposes upon himself this vigorous life. And so here he learns his first lesson of self-conquest; he becomes a man able to control himself. True, these men are not the best scholars of the college. But they are also far from being the worst. A careful examination of the scholarship of the athletic men of Harvard University disclosed the fact that they stand much above the work done by that institution; that the weakest work of that institution is done by the men who never enter the gymnasium; who, with plenty of money at their disposal, lead a loose, dissipated life.

Another interesting fact lately noticed is, that the athletic men as soon as they leave college and enter the professional schools become the most brilliant students there. All the intellectual powers, which seem to have been dormant while at college, owing to the athletic interests of the man, suddenly come to the front, and to the constant surprise of his classmates, the powerful athlete displays rich intellectual gifts. The explanation of this is very simple. The athlete strained but very little his intellect while he was at college, but he kept a fair balance between body and mind. And now when a more intense intellectual force is necessary, he has the freshness and the strength which his weak, pale, scholarly friend is sadly lacking, exhausted as he is by a four-years mental strain. The effect of the train-

ing received by these athletic teams generally lasts throughout life. The system is too thorough and far-reaching to have only a temporary influence.

And thus we see that college athletics is most intimately connected with the morals of the institution. The morality of colleges has been much discussed of late, and there are certain grave questions to be solved; but I firmly believe that if athletics should become general, and not as it is, limited only to a small proportion of the students, the most serious side of the question would be solved.

This intense activity in college athletics has not only its great influence upon the athletes themselves, but upon the large body of students. Seeing constantly these vigorous, finely formed athletes, they unconsciously become semi-athletic themselves. That is, the feeling of pity and almost of contempt is gradually developing in the large colleges for men of crippled and decaying bodies; for men whose whole interest lies in the absorption of books. The feeling is becoming so strong now that it is a dreadful thing at Harvard or Yale to call a man a "grind" or a "dig;" that is, a person who is dead to everything else but his books. I think that this is a very healthful feeling, and hope that it will continue to grow; for it is influencing at the very beginning the young student not to follow the narrow path of pedantry, but the broad, right road of true development. This public sentiment of the college is unquestionably to be attributed to athletics.

One of the most pleasant characteristics of the teams is the healthful spirit of democracy which is fostered among them. A man is elected captain of a team, not because of his wealth or family connection, but because of the strength of his body and mind. It is true worth which here gives distinction to the man. The utmost spirit of equality prevails. The poorest and the wealthiest sit at the same table, partake of the same food, live together, so that quite often the deepest friendships arise between men of totally different stations in life. In fact in general, a healthier and manlier tone prevails among the college athletes than among the other classes of students. It is clearer here than perhaps anywhere else, that a healthy body does bring with it a healthy mind. These men are rarely profound, but their ideas are always sound and vigorous. The buoyancy of their bodies gives a freshness and an interest to all their ideas, which is so sadly lacking in the close atmosphere of the exclusive student.

It is a very great responsibility to be on a college team, and the students regard it as such. The athletes know that the hope of the students and the glory of the college rest with them, and thus they soon develop that feeling of sacrifice, and of working for a cause, which is one of the most admirable and praiseworthy traits in life. Time and again do we notice men disabled at a game get up and play in spite of their intense pain, since they know that there is no one to take their place. There is something very stirring, almost heroic, to see a student risk everything because he knows that he is the representative of his dear old college.

This will probably suffice to indicate to you what influence athletics has upon the men on the teams. But by far more important than all this is its influence upon the college spirits. Athletics is, so to speak, the national element in college life. It is due to athletics more than to any part of university life, that the spirit of fellowship, and that love for the institution as a whole are fostered, which is one of the most beautiful things in connection with college life. I may say that at present, athletics is the only bond which unites this large number of students in our large colleges. The old idea, that a man must take a certain fixed curriculum of studies, is rapidly losing ground, and is being superseded by the elective system of education, which has the direct tendency of splitting up the college into a number of groups, which never come into contact with each other. The scientific men and the literary



men in a college where the elective system prevails never see each other. They move in totally different circles, and to all intents and purposes they may call themselves members of different institutions. But athletics binds them together, makes all men interested in the same cause, makes them all sympathize deeply with each other. It makes of the heterogeneous mass of students, on points which affect the glory of the college, one united whole. Victory in athletics brings a feast of rejoicing to all, while defeat is deeply felt by all, even by the dullest, and unites them all even more closely than victory, to retrieve the tarnished glory of the college. So deeply rooted is this feeling that the old college alumni, who have been brought up under the old system of education and hence can sympathize but little with the present work of the college, can and are on this point in thorough harmony with the institution. They, too, feel keenly the joys of victory and the disappointments of defeat.

Go to the large cities where college clubs exist, and you will notice every spring and fall, young and old graduates throughout the country discuss with the greatest interest the athletic outlook of their respective colleges. But athletics is entirely dependent upon finely-equipped gymnasia, and I am glad to say that the country is beginning to recognize the importance of it, and fine structures are being built every year for that purpose. The Harvard gymnasium, and I suppose the same is true of other colleges, has had a wonderful effect upon the development of the strength of the students. It is a fine example of what modern scientific training can do. In 1880 the athletic spirit was already very strong, and some men were regarded as wonders of strength and development. In the year 1889 there were 300 students stronger than the strongest man in 1880. That means that the powerful athletes of 1880 were not as strong as the average Harvard student of to-day. So, much may be accomplished by systematic training and finely-equipped gymnasia.

Seeing all this, I take the liberty to make here a strong plea for a gymnasium. It is really a crying want, and must be filled as soon as possible. It is of absolute importance. The first thing that a new-comer notices here is the total indifference of the students to the importance of bodily development. They may be strong, coming as they do generally from the country, but they lack totally the fine sense of physical beauty, which is so very important. I firmly believe that a gymnasium would revolutionize the spirit of our University. All the pettiness and discord which occasionally disturb now the student circles, would diminish or cease. A spirit of unity and harmony will assert itself as soon as the athletic teams will be introduced. The college mind will turn away from the particular to the universal. A more vigorous tone will pervade all classes.

One college ideal and one college life will arise out of the present cliques and factions. Athletics will give a great center for unity of purpose and action. Life will acquire an interest here hitherto unknown. The University will gain a prominence among other States, which so far is only partial. The University of Kansas will thus finally acquire, that which has long been felt wanting, a true college spirit.

At the conclusion of this paper, Prof. Snow admitted the claim for college athletics, but said that a gymnasium could not be productive without an efficient officer at its head to direct the students.

At the close of these remarks, the convention adjourned till the afternoon session.

## THIRD SESSION.

LAWRENCE, December 5, 1889—2:30 P.M.

The convention assembled promptly at the appointed hour.

The first paper was as follows:

## ADULTERATION OF FOODS AND MEDICINES.

BY PROF. L. E. SAYRE, DEPARTMENT OF PHARMACY OF THE KANSAS STATE UNIVERSITY.

Foods and medicines are, it may seem, classes of substances so different in kind that they are illy suited to be discussed together. But on closer inspection and study we see that such is not the case. We find indeed that they merge into each other, and that it is a difficult matter to tell where one begins and the other ends. Substances commonly regarded as foods are not infrequently used as medicines, and *vice versa*, substances regarded as medicines are used as foods, according to the circumstances under which they are employed. For example, the spices play an equally important part both in the drug store and the grocery. The same remarks apply to cream of tartar, bicarbonate of soda, lard, olive oil, and a variety of other substances that will readily suggest themselves to your minds. The grouping together of these two important classes of substances in the title of this paper is therefore justifiable.

The combined efforts of the medical and pharmaceutical professions have done much to aid in the improvement of the quality of bringing up the average of quality of this class of products. As to the efforts of the pharmacists, I would say that their representative organization, the American Pharmaceutical Association, has been markedly influential in this direction. One of the causes that led to the formation of this association was the existing urgent necessity of maintaining a high standard of purity for remedial agents and of exposing frauds in the various articles of our *materia medica*, whether domestic or imported. Article 1, section 1, of the constitution of that association, expresses the purposes for which it was founded, in the following words: "To improve and regulate the drug market by preventing the importation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulterations." The prevention of the importation of inferior and adulterated drugs was a demand of the time, and in this direction has the influence of the association in a marked degree been felt. This is shown by the fact that foreign dealers in drugs, who some time ago said anything was good enough for the American market, now say that there is nothing too good for America.

Formerly, certain drugs, although below the standard, were allowed to be imported for manufacturing and other purposes by responsible firms, who were placed under bonds that the inferior drugs themselves were not to be placed upon the market. In this way an inferior quality of opium could be advantageously used for the manufacture of morphine. This is no longer allowed, but the custom house inspector of drugs rejects all inferior articles, using as the standard for his determinations the pharmacopœias and dispensatories. In an official report on the alleged sale of condemned drugs by the Government in '84, we find that all drugs below the standard are rejected, and either re-exported within six months or destroyed; and further, that no condemned drugs are ever sold.

While adulterations have been very general and the practice widespread, it is the opinion of the writer that the influence exerted by boards of health and other scientific organizations has had the effect of improving this class of products found upon the market.

In a comparatively recent report on cream of tartar (of which 8,500,000 pounds

are used annually in the United States) the following language is used: "One good result in the competition in cream of tartar has been the introduction of a higher standard of purity. The larger proportion of cream of tartar now sold by the drug trade contains 99 per cent. of bitartrate of potassium, while 96 per cent. was the standard during former years."

Competition, we are told, leads to adulteration and cheapening of products. Is it not, then, remarkable that competition had just the opposite effect in the instance just cited? May it not be explained by the fact that manufacturers were closely watched, and were obliged to cater to a higher standard set up by bodies of scientific men?

It has been well said by those who have made a study of the subject with a view of tracing the cause of adulterations, that it is largely due to the demands of the trade. Dealers are not unfrequently asked to furnish articles at lower prices than the prime or unadulterated article can be sold for. Here the customer is often asked what price he is willing to pay, and is furnished with one whose purity or percentage of impurity depends upon and varies with the price obtained.

In trade there are two well-known classes of buyers: those who purchase the cheapest materials from the cheapest houses, and those who are willing to pay even more than the market price in order to obtain a pure article. The former will rarely obtain a pure article, and they are those who have our condemnation and should suffer exposure; but the latter are deserving of our sympathy and all the assistance and protection that we can extend.

The guilt and responsibility for adulteration, as before suggested, rests not only upon the miller, the jobber and the retailer, but equally so upon the public that demands a cheap article at all hazards.

A prominent spice manufacturer once told me that there were communities where the grocer could not obtain more than 15 cents per pound for ground pepper, when the cost of grinding the pure article was at least twice that amount. For such cases—wherever the trade demanded a cheap grade—it was customary, I was informed, to make several brands. One, known as "pure," which was unadulterated, as the name indicated; next, one known as "strictly pure," a lower grade; and among other brands was a "perfectly pure," which was the one most adulterated. These varieties of ground pepper were kept on hand and sold to supply the wants of various classes of buyers.

That manufacturers of all kinds of food products are continually besieged by close and low buyers, is familiar to everyone who knows anything of trade, and in order to supply the demand for cheap, low-grade goods, they are oftentimes taxed to their utmost. Recently one of the large manufacturers of flour of this city was asked by a large buyer to furnish several car-loads of flour for \$1 per hundred-weight, the price of flour at the time being, in large lots, \$1.75 per hundred-weight. The order was declined, on the ground that the mill did not grind any such low grade of flour. The buyer said in reply that he could obtain it elsewhere, and so he did. What sort of flour could he have obtained for \$1? I venture to say it was like some others I have examined, scarcely worthy the name of flour. What is known as a very cheap flour is made up of what is known as the cleanings, sweepings and screenings, mixed with unmarketable wheat, or is likely to contain an admixture of earthy material such as *terra-alba*.

I have here a sample of flour, the history of which may be of interest to the citizens of Lawrence. This is known as a dried dough-ball. In testing flour a small quantity of a sample is taken and mixed with about an equal quantity of water, and the resulting dough is made into a ball and set in the sun. If the ball swells and displays the characteristic signs of elasticity, etc., it is considered good.

In this way the quality of a given specimen is approximated. This interesting sample upon testing by the usual method resulted in a "dough-ball," not only devoid of elasticity, but quite the reverse. The dough-ball looks as if it might be rather a fossil than a food. I have examined this so-called dough-ball to ascertain its composition, and find it to contain over 50 per cent. of an infusible and incombustible material. In the examination (which was made beside some pure flour), it seemed to act throughout as if it were almost pure mineral.

It seems almost incredible that such adulteration should escape the notice of those who have in charge the supply of food products for the Government, but strange to say, this is one of the samples of flour landed here in Lawrence to supply the Indian School. In the light of what we know to be true as to the careful inspection of drugs, medicines and foods for the regular army, and the care exercised by the Government to expose any attempt at fraudulent adulteration, the above fact is still more astonishing. I do not question myself but that in this case the responsibility lies in the buyer for the United States Government. It is well known that for the Indian tribes, they barter for flour at a stipulated low price, and do not seem to care as to the quality. Using the language of one of these men as was told to me, "I don't care what it contains, so that it looks as good as this white sample."

Recently, I have taken especial interest in the examination of spices and articles commonly used upon the table, such as cream of tartar. In the Transactions of the Kansas Academy of Science will be found some reports upon pepper and tea, and in the Proceedings of the Kansas Pharmaceutical Association, reports as to the quality of cream of tartar. In the proceedings of 1888 will be found quite a lengthy report on the baking powders of the market. This work was done by one of the lady members of the pharmaceutical class, Miss Rice, under the direction of Prof. Bailey. Latterly I have had under examination the mustards of the market. I am pleased to say that I have not found any to contain terra-alba, but I have found wheat flour in many samples. This is harmless admixture. Some contend that mustard is improved by a farinaceous dilution. They maintain that pure mustard is entirely too strong, acrid, and pungent, and demand that it be reduced in this quality both as a remedial agent and as a condiment. Mustard contains no starch. This fact gives us a means of detecting the admixture at once. If even the smallest quantity of starch or farinaceous substance is added, it can be detected under the microscope, as the starch granule is readily recognized by any microscopist. Further, if a solution of iodine be added to the mustard under examination, no very perceptible change takes place; if, however, starch is present, iodine at once betrays it unmistakably by producing with these grains a blue coloration. (A chart was exhibited explaining this point.)

There are a number of ways of cheapening mustard besides that of adding a foreign substance to it. It may be reduced in strength by partial exhaustion, etc. To arrive at a conclusion as to the exact value of mustard, one must pursue a thorough and somewhat intricate analysis. This work has not as yet been completed, but in the near future a report of such an investigation will be made for the Kansas Pharmaceutical Association.

Professor Sayre referred to the many products used by millions for the purpose of adulterating mustard, and spoke of the fact that many of our common foods, such as rye flour and buckwheat, were almost always impure. In fact, the consumer demanded in these latter an admixture in preference to the pure article. He referred to the recent law regarding the manufacture and sale of adulterated foods and medicines, and in referring to the liability of the retailer, he cited an interesting case, which was as follows:

A few years ago a certain retailer was tried on a charge of selling adulterated



cream of tartar. This so-called cream of tartar contained about 95 per cent. of terra-alba and 5 per cent. of tartaric acid. He was convicted and fined. The retailer, who had purchased and paid the market price for the pure article and sold it in good faith as such, appealed to the Supreme Court. Judge Cowing, in summing up the evidence in the case, made the following statement and decision:

"There is no positive or direct evidence that the defendant was guilty of any criminal intent or culpable negligence in selling the cream of tartar. On the contrary, the unavoidable conclusion is that the defendant was desirous of obeying the law, bought the cream of tartar in open market, paid the highest price, and asked for the best article. The evidence falls very short of making him a criminal. . . . If the Board of Health is desirous of following up this line of investigation, I think the manufacturers should be directly attacked."

#### DISCUSSION.

PROF. CANFIELD asked if there is a law which will cover the negligence of the seller of an impure or adulterated article.

MR. SPANGLER replied that the Kansas statute makes the seller of an adulterated article liable, as well as the manufacturer. The trouble in our State is that no one seems to be responsible for the prosecution.

PROF. BAILEY gave some statements of cloves and pepper. Of twenty of cloves, two were pure. Of pepper, none pure. The French have sent us impure goods, unsalable in Europe. Should be especially careful not to buy articles accompanied by prizes; they are always useless.

MR. WOODWARD said that he had yet to find any manufacture of spices that was absolutely pure. There is a petroleum product, a rosin product, put on the market as linseed oil. The manufacturer does not sell it as linseed oil; he calls it a substitute. The dealer who buys usually knows by the price whether he is buying a pure article or not. If he does not pay the price for it, he does not get it, yet he is quite likely to offer it for sale as genuine.

MRS. DIGGS suggested that it might be well to take the manufacture of certain drugs, etc., out of the hands of private manufacturers.

MRS. GRUBBS suggested that better flour might be made from the whole wheat, as was done some years ago, by the Graham process.

The following paper was then presented:

#### THE INTEREST OF THE STATE IN THE PREVENTION OF DISEASE.

BY JOHN A. HENNING, M.D., OF GARNETT, COUNTY HEALTH OFFICER.

This is undoubtedly an important question, and evidently requires more than a common answer. The question resolves itself into: What are the remote and immediate causes of epidemic diseases? Second: The interest of the State in preventing epidemic diseases.

It is very necessary to answer at least partially the first question, the remote and immediate causes of epidemic diseases, before we can examine the second question. All persons are, more or less, health-seekers. Every person, more or less, will flee from causes of disease. But a large number of persons are ready and willing to do any reasonable work to avoid disease. But the masses of the people are not aware of the etiology of disease. Many of our common diseases, such as the various kinds of malarial fever, pneumonia, catarrh and other inflammatory diseases, will naturally occur on account of exposure and sudden changes of weather. But we

desire to more particularly call the attention of the State Board of Health to the contagious and epidemic form of diseases, that frequently are in our midst. It is very true, that the ætiology of those contagious diseases in an epidemic form are very difficult to discover, and very difficult to eradicate or stamp out, when in existence; but it can be done to a great measure if proper scientific skill is applied. I think the medical profession have pretty well settled the question by microscopic examination, that all those diseases in contagious and epidemic form are caused by a specific animalcule, either animal or vegetable, living germ. What I mean by specific germ, is that each contagious disease, such as diphtheria, small-pox, scarlet fever, and typhoid fever, has its own peculiar germ. In this lower world of ours, scientists tell us that we are living in the midst of over 3,000 different species and varieties of germs.

It seems to me the day is past to deny this germ theory of disease. I have frequently verified this fact the past few years with the microscope, but evidently it still requires farther scientific research. But I am glad to record the fact that scientists are giving us new and valuable evidence every day.

Doubtless, a large number of those germs are generated in our midst every year, either from decayed vegetable or animal matter. In some years and some particular locality, they may be generated in sufficient quantity to cause some form of an epidemic disease. Upon this basis, with the scientific research we already have of the germ theory of disease, we can approximate the ætiology and phenomena of some of those diseases.

Those spores or fungi, as they spring from their source of generation, when in sufficient quantity under favorable condition, causing some form of epidemic disease, readily attack persons in a negative condition, which are capable of multiplying within the human system with great rapidity.

Now when the human system is in a normal or positive condition, it inevitably has the power to repel or ward off an attack, but when the human system is in an abnormal or negative condition, it gives the germs an excellent nidus, reproducing themselves with great rapidity.

The soil, locality, climate, warmth, and moisture, or dryness, aid materially in their production. Now having the starting-point, we can more fully particularize and somewhat classify them. Baccilli and micrococci causing diphtheria; saracenia causing variola; fungi causing measles; ameba with their associates forming colonies, causing many diseases of the respiratory organs, such as some form of pneumonia, asthma, catarrh, laryngitis, and bronchitis; sarceni ventricule causing forms of dyspepsia; verbrious, general nervous depression, but particularly typhoid fever; the odium albicans and its associates, pseudo-membranous croup; mycelium, whooping cough, trichina spiralis, trichinosis; bacteria and oidium albicans, erysipelas. This is but a general outline of the effect of those germs, but it is our imperative duty to study how and where they germinate and prevent and stamp them out. This is not such a momentous question as some may think. Every cyclone has its starting-point, and that point undoubtedly has but a small beginning. Out yonder I see children playing in a barn-yard on a pile of straw; in their innocent, playful manner they ignite a match, the straw is set on fire, next the barn, then the house, then the next house, finally the whole square or town is burned — all caused by a match.

A few months ago complaint was made that a certain slaughter-house in the county was a nuisance to two or three neighbors. I at once visited the place. Before I got to the slaughter-house, within five hundred yards, I could smell it. I told the Dutchman, the proprietor, it was a nuisance, detrimental to health. He said, "I could smell nodding." After examining it carefully, I think it was the dirtiest and

most offensive place I ever saw. Now here was a depot for ptomaines germs to generate in such quantities as to start some kind of an epidemic disease. I believe, and am nearly ready to prove by scientific research, that many of our epidemic diseases start from just such a place. Do you believe it? But let us investigate this slaughter-house a little further. Here was not only a bad, unhealthful effluvium arising within a radius of three hundred yards, but it is self-evident that this slaughter-house was filled with living germs of different species; and is it not a rational and reasonable supposition that the beef slaughtered here, in fifteen minutes — this beef for the people to eat — will be filled with those living, different species of germs? And it is simply impossible to prevent the beef from being contaminated with poison from such a slaughter-house. Who wants to eat such beef? Is there anyone in this convention who would eat such beef if he knew it?

I desire to call your attention to another important matter that requires more than a passing notice. The milk used during August and September, especially in dry seasons, is more or less impure, especially for the sick. Why? Because during those months many of those animalcules, both vegetable and animal, naturally fall on grass and kill part of the blade of grass and the other part stays green. This is caused by those germs, and while the grass, or a part of it, is killed, they still live, and are regenerating. Cows eat this stuff. Those germs are not killed in the cow, but live and get into milk. Is this milk healthful? Again, during those months, the water the cows get to drink out of ponds is nearly always impure and filled with animalcules. Will this water make healthful milk?

Another important matter that must and is receiving attention. During hot weather a poison called tyrotoxin is generated in cows' milk; and tyrotoxin is like strychnine or arsenic, very poisonous. Children drinking this milk who are in a negative state will inevitably become diseased, especially taking some form of summer complaint, such as diarrhea, dysentery and cholera infantum, and perhaps some other grave and fatal disease.

Then another field no less important is the ice we use in summer season. Much of it is unfit for use. Last summer I examined a half-dozen different samples under a good microscope, and nearly all the samples examined were more or less filled with effete matter, bacteria, and animalcules of lower organisms. Then again, much of our water, both in wells and cisterns, is unfit for use. Doubtless some of it does cause typhoid fever, erysipelas, and other grave diseases.

During October last, I was called to see a girl 12 years old, with diphtheria. After making my diagnosis, I called for two tumblers, one empty, the other filled with water. I put them side by side, the sun reflecting its rays in this water in the tumbler, while I was preparing medicine. I noticed the water very bright and sparkling; holding it up between me and the sun, I counted about a dozen moving germs in it. I called the attention of the father of the child to it, who said it was cistern-water; not having any other, used it exclusively in the house, supposing it to be good water. I did not examine this water with the microscope, as I had no time then. The family used this water to drink and cook with. Of course it is not now used. We had an epidemic of diphtheria in our county recently, which now is abating, but the epidemic may have started from a bad pool of water, slaughter-house or dead animals.

Three years ago in the village of Glenlock, in our county, eleven cases of typhoid fever occurred. After two died, I was called on the scene, to take charge of the cases. I first looked for the cause of this local epidemic of typhoid fever. I examined the water they had used, and found it full of sediment; ordered it boiled, and use when cold only the top part of it. Next I asked where their cows got their water to drink. They showed me a pool of dirty, filthy water, mostly covered with

a thick green scum, doubtless of living germs. I ordered them not to use the milk or butter at all. The result was, the cases got well and no more new cases. We removed the cause.

Within the last two months a severe epidemic of diphtheria and scarlet fever broke out among the 900 children, soldiers' orphans, at Xenia, Ohio, with 9 deaths; and among the 165 who were sick with either diphtheria or scarlet fever, the physicians traced the cause of the epidemic to a hog-pen within a quarter of a mile of the house. The farmer who fed his hogs in the hog-lot lost two of his boys from diphtheria. Now here is a plain case how many of our epidemic diseases originate. Many of our counties in Kansas, perhaps, have similar nuisances. I think the cause of the epidemic of diphtheria in Anderson county could be located. What we want is law and proper authority to prevent and stamp out the primary cause of these epidemic diseases.

Second, it is the State's business to avoid and stop these epidemics, and stamp them out. Now, by the State giving us good sanitary laws, and then each county appointing good, competent health officers, whose duty by law compels them to look after all the causes of epidemics or local nuisances, we can stamp them out like stamping out a small fire.

How will we get those necessary State sanitary laws enacted? Let the present State Board of Health present to our next Legislature the causes of many of our epidemic diseases, in plain, practical, self-evident facts, and they will gladly give us the necessary laws that the State Board may frame themselves. We want laws to stop all kinds and forms of nuisance, see that all meats are healthful, all milk and butter are wholesome, all privies, alleys, on private as well as public property, are kept clean. Have proper penalties to those laws, that they may be readily enforced.

Then again, let the county health officers receive a reasonable compensation, and have none but qualified, competent, scientific men as health officers. If we are thus clothed with proper sanitary laws for the State, and in proper hands, no doubt in my mind, many of our epidemic diseases can be abated and stamped out; thus adding wealth, health, prosperity and happiness to our glorious and prosperous Kansas.

#### DISCUSSION.

This paper was discussed as follows:

DR. SCHENCK said that Dr. Benjamin Rush said the State should be responsible for every death by fever. We haven't advanced much beyond that. Dr. Root tried to get a law for the collection of vital statistics. We have a State Board of Health, but with no power. We can prevent disease in very great measure, but the State must give us power to act as sanitarians. It is of present moment to impress upon the Legislature the necessity of passing good laws and putting them in good hands for execution.

PROF. CANFIELD: Request has been made that the State give more power to sanitarians. In cities, however, the mayors and councils have a large power; and it ought to be exercised before asking for more. I have examined some of the ordinances of a certain city in Mesopotamia, and I find the ordinances to be excellent. They were hidden away somewhat, not having been recently used. When I inquired why they were not enforced, I was informed that there was not proper police force, nor was there any money for the purpose. But it does not seem that there is need of either



police or money. Certainly the mayors and councils may have the cities examined at least twice a year; and all breaches of law brought to notice immediately with penalty enforced. Prof. Canfield made a very strong appeal for municipal action in every city.

DR. SCHENCK agreed that the cities should enforce their ordinances; but still claimed that the sanitarian should be the executor.

DR. SWALLOW defended the Legislature against any charge of inattention to sanitary matters; they had not been properly instructed or informed by the openly expressed wishes of the people.

The following paper was then presented:

#### SANITARY INSTRUCTION IN SCHOOLS AND COLLEGES.

BY W. L. SCHENCK, M.D., OF OSAGE CITY, MEMBER OF THE STATE BOARD OF HEALTH.

Macaulay tells us, in his history of England, that in 1690 "one-third part of Scotland was in a state not less savage than New Guinea." He also informs us that Sir John Dalrymple, Minister for Scotland, thought he was doing service to God and his country when he wrote to the general commanding the Scotch army, "Your troops will destroy entirely the country of Lochaber, Lochlied's lands, Keppoch's, Glengarry's, and Glencoe's. I hope the soldiers will not trouble the government with prisoners;" and we infer that those who could commit the "most dastardly and perfidious assassination" of MacIain and his clan at Glencoe, were not much farther advanced in civilization. Yet this wild people, less civilized in many respects than any of the nations of Europe, poor as they were rude, utterly exhausted by long-continued intestine and foreign wars, from an impulse born of a religion whose spirit they did not comprehend, in 1696 established the first system of national education, ordaining that every parish in the realm should provide a commodious school-house, and pay a stipend to a school-master. In less than a generation, notwithstanding her inclement climate and barren soil, in agriculture, manufactures, commerce, science, civilization, Scotland stood first among the nations of the world; and wherever her common people went, and in whatever they engaged, they easily rose to the first rank, and demonstrated to Christendom the beneficence of national education. Two centuries have witnessed great progress in educational methods and results, but great as has been the advance, the question remains: *What lack we yet?*

The highest civilization is that which most sacredly protects the life, health and development of man. Civil rights, science, art, commerce, agriculture, all earthly blessings and endowments, are secondary and subsidiary to human life and human happiness. "We hold these truths to be self-evident, that all men are endowed by their Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness." Life first, for without it we have no rights, we possess no endowments. Nothing of this world follows beyond the grave. Liberty, happiness, prosperity, glory, are all incident to life, and a nation's might and majesty are in the life, health and development of the citizen.

Whence comes the greatest danger to life and its greatest destruction? Not from the midnight assassin, not from armed legions in battle array, but from "the pestilence that walketh in darkness and the destruction that wasteth at noonday;" from consumption, cholera and yellow fever; small-pox, typhoid fever and scarlet fever; diphtheria, dysentery, and other diseases largely incident to civilization and preventable by civilization. Filth accumulations, water contamination, deteriorated

food and drugs, defective systems of heating, ventilation and sewage, the hydra-headed sequents of alcoholic beverages, nostrum venders, quack doctors, with various other causes, that civilization can and should control, are the active sources of disease and death; so active that they make the declaration that all men are endowed with the inalienable rights of life, liberty and the pursuit of happiness seem as "sounding brass and a tinkling cymbal."

We are a fast people. We are impatient of restraint. Anxious to annihilate time and space and acquire fame and fortune in a day. Whoever can solve the problems that lead to success in this direction is deemed a greater benefactor than he who gives health and prolongs and thus secures the benefits of life, liberty, and the pursuit of happiness.

What liberty to him who is bound in the chains of disease and miserably deprived of life? What happiness when fevers burn and ague freezes, when the body is racked with pain and the soul tortured with anxiety? Americans need a proper comprehension of the value of human health, and life, and of the means by which they may be secured and preserved. While the old idea that the spirit was good and the body bad, to be mortified and persecuted by fasting and flagellation, has passed away, is not the body still considered a sort of poor relation? Dispute as we may about the comparative rank in the scale of being, of body, mind and soul, neither mind nor soul are capable of perfect development and manifestation while associated with diseased bodies. Though all analogical reasoning concedes the immortality of the spirit, we know of no other medium through which it can acquire force and character, or receive and communicate mental and moral impressions. The intellectual and moral man must be so educated that it shall have power to keep within due bounds every carnal appetite and desire, but it must recognize in the body an active, imperious and necessary help-meet. Healthy bodies are essential to the healthy growth and activity of mind and soul, and it is hence the duty of the educator to comprehend the laws of both physical and spiritual life and growth, and to instruct the pupil how the health of both soul and body can best be secured and preserved.

Perhaps we can find no better illustration of the influence of matter upon mind than in the action of alcoholics. It has long been known, and is a matter of everyday observation, that a large percentage of crime results from the use of intoxicants. Every drunken man labors under a temporary hallucination and delirium, directly consequent upon the condition of his nervous system, which pathological condition continued, that which was at first transient becomes chronic. *In vino veritas* is an old faith. With an alcoholized brain, both the perception of the properties of life and the power of control being weakened, the desires of the soul reach their ultimatum. Hence the villain, however hardened, when he meditates crime, hebetizes conscience by anesthetizing his body with alcohol.

In America a very large proportion of the insane are of foreign birth. A foreign syndicate controls our breweries, foreigners keep our saloons and "joints," and foreigners do a large proportion of our drinking. The increase of insanity is in direct proportion with this habit and this class of citizens. While we recognize in the surroundings of the saloon and the drunkard conditions that tend to mental alienation, the alcoholized tissues are the important factors.

Those who take this position in Kansas are sometimes considered cranks, and their deductions ignored. Such suspicions can hardly attain the citizens, especially the scientists of Holland, Belgium, France, Switzerland, Italy, and England, where alcohol, in some form, is a part of the daily dietary. Last August the third International Congress for the Study of Alcoholism was held in Paris. While French ideas predominated, the Congress was European, and it was shown by government reports that in the last twenty years insanity had increased nearly fifty

per cent., and that the consumption of alcoholics had increased in nearly the same ratio. Among the members of the Congress there was great unanimity of thought, and the following opinion and resolution was adopted:

"The increased consumption of alcoholics is one of the principal causes of the increased development of crime and insanity."

It is not our purpose to consider the duty of the state in protecting the citizen against crime, nor to attempt to demonstrate the pathological conditions consequent upon the use of alcoholics, but merely to refer to a potent illustration of the action of the physical upon the intellectual and moral life.

Whether the human race came from the hands of the Creator by a fiat of Omnipotence, physically, intellectually and morally perfect, and have since retrograded, or whether evolved through unnumbered ages from monad, bivalve, quadruped and simian, there exists the same reciprocal influence and dependence between mind and matter, and the duty of the educator is not to develop mind and soul, but the whole man. *The whole man.* "What a piece of work is man! So noble in reason! So infinite in faculties! In form and moving so express and admirable! In action so like an angel! In apprehension so like a god! The beauty of the world, the paragon of animals!" "Fearfully and wonderfully made."

Whatever the relation of the spirit to the body, whatever its possibilities, and however indestructible, it is not less difficult to measure the value of physical than of intellectual and moral life and health. We cannot comprehend a mind diseased without predicating a diseased body. These are not materialistic theories and speculations. The laws of nature are the paths of God, and it is by walking therein physically and spiritually, that we reach the grandest possibilities of life. "*Mens sana in corpore sano.*"

Suppose the mind could attain its highest possibilities with an infirm and broken physical life. Physical health is necessary to the execution of its behests. If not the instrument through which it labors, it is that by which its labors are made manifest. Instead of being a productive factor in the state, with a diseased body, man becomes an incubus. When several members of a family are sick it cannot attain the degree of prosperity and happiness possible when all are well. So a community or state can only reach its greatest prosperity when its citizens possess the vigor of health. The citizen is the primary source of growth and wealth, and the prosperity of the state is in inverse proportion with its disease and death. The great need of the age is an educational system that will impress upon the rising generation the value of human life, and the means whereby disease may be prevented, health preserved and life prolonged; a knowledge the student shall carry to the various positions of honor and trust he may be called upon to fill, and thus be enabled to afford protection to the community in which he may reside, and to preserve his own health and life.

Individuals, states and nations have everywhere and through all time encouraged a study of the laws by which vegetable and animal life is developed and perpetuated. The scientific agriculturist has made two grains grow where there was but one. Generous nature has appreciated his demand. The pomologist and horticulturist, disregarding seed, has converted all into husk and pulp, and his peaches and apples and pears, his grapes and melons, are well-nigh seedless; and the fair floriculturist, disregarding both seed and pulp, has eliminated pistil and stamen and ovary, and transformed all into beautiful petals. The horse has been changed at will into the fleet-footed, tireless and docile Arabian, the strong-limbed and heavy-muscled Norman, or the beautiful little Shetland—fit play-fellow for our children. Cattle have been bred into the thought of the breeder for beef, butter, cheese, or milk. The Arkansas "pumpkin-seed" has been changed into the Berkshire, the Chester White, and the

Poland-China. Even dogs and cats have been cultivated into form and purpose as varied as the thought of master and mistress. Unbounded intelligence, skill and patience, and untold wealth have been expended upon all the lower forms of life. State appropriations have guarded them against disease and encouraged their development. Only the health and life of man have been deemed unworthy the fostering care of the State; and yet man "is of more value than many sparrows."

One hundred years ago that grand American, Dr. Benjamin Rush — patriot, statesman, physician and sanitarian — said, "The legislator should be held responsible for every death occurring from fever"; and would not the same logic make the educator responsible for the legislator?

In a report upon physical culture, Dr. Hutchinson, of Rhode Island, recently stated: "The strain upon our public-school children and upon the teachers is such, that for the last year in the city of Providence it has thrown upon their backs, prostrate with nervous exhaustion, over ten per cent. of the teachers." And we know a school, not so far away as Rhode Island, where the worry of crowded rooms and the hectoring of the principal leaves the teachers at the close of each school year worn well-nigh "threadbare."

Thus teachers and pupils are annually sacrificed in the house of their friends, where the laws of health should be obeyed and illustrated. Every pupil in our public schools should be given at least a practical knowledge of physiology and hygiene, while those who attend the academy, the college and the university, and who are to become leaders in society, rulers in the State, and instructors in its schools, should learn all that is known of preventive and state medicine. Every such institution should have professorships of physiology and preventive medicine. Then, and not till then, will there be such an appreciation of the principles of sanitary science, and such an application of preventive medicine, as will make health the rule and disease the rare exception, and prevent our Ingersolls in their sneer of Providence from asking, "Why is not good health catching?" Such professorships will prevent from being practically a dead letter a law which provides that "No certificate shall be granted to any person to teach in any of the public schools of this State after the first day of January, 1886, who has not passed a satisfactory examination in the elements of physiology and hygiene, with special reference to the effects of alcoholic stimulants upon the human system, and a provision shall be made by the proper officers, committees, and boards of education for instructing all pupils in each public school supported by the public and under State control upon the aforesaid topics."

It does not require a large amount of intelligence to comprehend that to understand the therapeutic action and the pathological effects of alcoholics and narcotics, and to teach the principles of physiology and hygiene with special reference to their action, more than an elementary knowledge of these important branches of education is demanded; nor does it require great prescience to know that however great their destruction of health and life, they are not responsible for all preventable disease and death; nor does it require any very extensive observation to understand that in most of our public schools the knowledge imparted is so exceedingly elementary that it might be eliminated without material loss.

How shall teachers teach unless they are taught, and how shall they be taught without a teacher? When proper instruction is imparted in the college to those who are to become teachers, and carried by them to the public school, the world will learn that the filth accumulations that infect the air we breathe, pollute the water we drink and contaminate the food we eat, engendering and intensifying the whole family of zymotic diseases, undermining the constitution, and making every type of injury and disease more formidable, can and must be prevented by legislative en-



actments, and that those who make and execute the law must be held as responsible for preventable disease and consequent death as for injury and death arising from neglect to protect against powder magazines in public places, arson and murder. But never until the people comprehend its importance will legislation for the prevention of disease be enacted and executed, legislators held for preventable disease, and boards of education and teachers who consent to over-crowding, to defective ventilation, heating and drainage, impure water-supply, the contaminations of illy-constructed and cared for privies, uncomfortable and injurious seats, the communication through ignorance or carelessness of infectious and contagious disease, morbid stimulants to study and conduct, or other preventable source of injury to the body, mind or soul of the pupil, be held for the results, as far as it is possible to hold by law for dwarfed minds, depraved morals, sickness, suffering and death.

It is not our purpose to discuss the various septic poisons; the laws that govern their origin and being; the means of their detection; the results of their infection; the methods of their prevention and removal; nor any of the various causes and conditions that bring disease and death to individuals and communities. We give a single illustration of the power sanitary science has acquired over disease:

England's great statesman and historian, T. B. Macaulay, in speaking of the death of good Queen Mary, says: "That disease over which science has since achieved a succession of glorious and beneficent victories, was then the most terrible of all ministers of death. The havoc of the plague has been far more rapid; but the plague had visited our shores only twice within living memory; and the small-pox was always present, filling the churchyards with corpses, tormenting with constant fear all whom it had not already stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover."

The laws of Kansas make no provision for the "glorious and beneficent victories" that rob this loathsome and fatal disease of all its terrors. Though three years ago the State Board of Health recommended the systematic application of the great discovery of Jenner, it had no power to enforce its recommendations; and during the last year small-pox occurred in almost every portion of the State, causing much suffering and many deaths.

While it is easy to demonstrate that water supplied from streams that drain a wide extent of territory must contain much of the animal and vegetable remains that lie upon the surface of the country drained, and may contain the specific poisons that produce typhoid fever and other septic diseases, and that we are surrounded by preventable causes of disease, we rather desire to press home the thought that the educated people of every community should be so educated in sanitary science that they will be able to recognize the causes of disease, and to prevent, remove or modify them, and so secure to themselves and extend to those over whom their opportunities have given them guardianship, life and health, happiness and prosperity.

Life is not, as it seems to be considered in our American civilization, the cheapest commodity in the market. It is the *sine qua non*, without which the possibility of earthly possession and honors, and the opportunity for enjoyment and improvement are not, without which we are not. While our people would arise as one man and avenge the death of a neighbor slain by an assassin's bullet, as I saw them do the other night in the capital city of the State, a bullet from a pistol is not a more certain messenger of death than the poisons by which ignorance, carelessness and cupidity contaminate our common inheritance of air and water, and deteriorate and adulterate necessary food and drugs, and bring to our neighbors' and to our own firesides suffering and death in an hundred forms, and a thousand times more fre-

quently than by the assassin's pistol. To protect ourselves and our neighbors we must comprehend the methods by which death thus invades our homes as we comprehend the pistol-shot. We must know the causes, their modes of action, and their means of prevention. To know these, we must understand the laws of life and sanitary science. This knowledge does not come by intuition, but must be acquired as other knowledge—through education. As life is a factor without which all knowledge is valueless to this world, every institution that educates should make this knowledge fundamental; and why not? If it is the purpose of education to draw out the mind, to teach it to reason from cause to effect and from effect to cause, what better field than the study of the laws of life, physical and spiritual, and of the various causes and processes that change physiological into pathological action, and the means by which they may be prevented or restored?

If it be the purpose of education to interest while it instructs, what grander field than biology—the laws that govern our being, following life from a simple microscopic cell, proliferating and differentiating other cells until a million lives are bound in one, working in perfect harmony, each for all and all for each, and the investigation of the various causes and processes that disturb their harmonious action and relations?

If it be the purpose of education to store the mind with such truths as shall be of the greatest practical value to the individual and to society, what more important knowledge than that which will enable us to preserve health and prolong life, and through what knowledge can we better earn the blessed benediction, "Ye served your brethren; ye have served the Lord."

Hygiea was heaven-born. Without her blessing, spiritual life is manacled and every joy embittered. In her right hand are length of days. How much that means we hardly know. At fifty years, men are just prepared to give to the world the rich fruitage of accumulated wisdom, and as the years of man are three-score and ten, the world is entitled to the harvest. But alas! when the harvest is ripe how few are the reapers.

It has been considered the special function of the physician to protect the community against disease. He does not so understand it. His business is to relieve suffering and cure disease, and for this you pay him. The more disease, the more business. Yet you expect him to abridge his income by preventing disease, and to do it free of charge—and so does the State. When it appoints a board of health to look after the most vital interests of the State, it provides no consideration. While it very properly pays governors and legislators, judges and juries, and others who look after general interests, even those who supervise the health of cattle and swine, it expects its health officer to work without pay and to protect the health of the people without legal authority.

While physicians do perform a large amount of this kind of labor and perform it not only without hope of fee or reward, and no other class of philanthropists do charitable service, as a genuine altruism, destroying their means of support by their gratuitous labors in the interest of humanity, the simple statement of the fact that the prevention of disease is wholly in the hands of those who live by curing disease, should, in this selfish world, sufficiently emphasize the necessity for professorships of preventive and State medicine in every normal school, college and university in America; and until such professorships can be established and bring forth fruit, the State should provide for a system of sanitary supervision through which in every city and township competent sanitarians should be employed to inspect school buildings and their surroundings, and to give instruction to teachers and pupils in the principles and practice of sanitary science.

Death crowds our pathway from the cradle to the grave. The babe is scarce

born before an ignorant attendant plies it with some indigestible mixture, causing intestinal debility and pain, when the nourishment nature has provided for the infant is blamed with the indigestion and suffering, and the changes are rung on "baby foods" until a "mysterious Providence" takes it "where the wicked cease from troubling, and the weary are at rest." If it escapes the pitfalls of infancy, where a majority are buried before they reach their fifth year, when school life begins, with hardly a properly ventilated, warmed and lighted school building in the land, with no system of regulated exercise and with all kinds of unsanitary surroundings, it again runs the gauntlet of disease. If it escapes, and enters the college or university, with over-exercise or under-exercise, with injudicious stimulants to study for the sake of success rather than for the sake of knowledge; starving the body with a "pot-luck" system of "batching"; graduating, if life is spared, with a practical knowledge of disease but ignorant of the causes that produced it, and that abound in air, earth, water and food, in domestic, social, business and even religious surroundings, and of the means of detecting, preventing or removing them. With a degree, earned, it may be, through a thorough acquaintance with the college curriculum, but with a broken life, and utterly ignorant of the precept of Solon, "*Gnothi seauton*." What wonder the wise man said and that wise men continue to repeat: "Man that is born of a woman is of few days, and full of trouble. He cometh forth as a flower, and is cut down. He fleeth as a shadow, and continueth not."

While I may not have presented you with any new thought, if I have awakened interest in a subject whose discussion is at least not worn, and so hastened the day when sanitary instruction in our schools and colleges shall become an important means of preserving health and life, and all they represent, by becoming an essential part of all education, and when preventive medicine and surgery will well-nigh cover the field of medical science, my effort has not been in vain.

The next paper read was as follows:

### PHYSICAL CULTURE IN ITS RELATION TO HEALTH.

BY W. S. BUNN, M.D., OF LAWRENCE.

The subject of physical culture as a means of promoting health is an exceedingly appropriate one for discussion in an American town.

Our habits of life that constitute us a peculiar people descend accentuated to our offspring, until it is apparent that some system of physical education must be adopted to preserve the race in its integrity. Probably no other civilized people upon earth present to the student of race characteristics such intense, restless energy and universal ambition pervading all classes, as the American. In European countries, necessity and custom have led one generation to follow in the footsteps of the preceding, and contentedly accept it as part of the ordained law. Here, the individual who does not aspire is considered an aberrant species from the family germs, and every show of strength is coaxed into speed for the great race for wealth and fame.

This is an age of great cities, and according well with their unparalleled, rapid growth in the ratio of its increase, has arisen a malady. It belongs essentially to the town-dweller, where the wits are nourished and the bodies neglected, and affects alike both sexes. Its fashionable names are "neural exhaustion," the "neurotic tendency," etc.

Let us note a person presenting this neurotic tendency. He is an energetic, hard-working fellow, a good husband, for he is decidedly erotic, fond of his bright, slight, quick-witted daughters, likes to see his sons throw themselves heart and soul into their business, and encourages them by precept and example so to do. Later on he



is a spare, worn-looking man; complains of indigestion, acidity, flatulence, intestinal atony; has cold hands and feet, headache, perhaps asthma, more often the evidence of shrinking kidney. He is nervous, restless, varying from exaltation to despondency, easily perturbed and "put out" by small things. He is aware of all this himself, and those about him generally are not allowed to long remain in ignorance of the fact. He is a creature of sad experience.

Did these features end with the affected individual, it would not be a matter of so much moment, but unfortunately each birth is not an hygienic regeneration, and Nature has not ordained that all her children shall begin the journey of life from beyond the point where the road of misery and happiness diverge, but the old mandate still rings down the ages unrepealed: The sins of the fathers shall be visited upon the children to the third and fourth generations. In many instances this amounts to an edict of extermination.

Dr. Fothergill says, "If a man forsake the country and become a dweller in town, the first step toward the extinction of his race is taken." Without fresh infusions of blood (not Brown-Sequard's) from the country, his progeny degenerate to extinction in the third and fourth generations. The children of the veritable neurotic, in fact, are delicate in childhood; they grow up dyspeptics, and their progeny, despite all care, succumb to the maladies of childhood. Each generation is more markedly neurotic than the preceding, until it comes to that bundle of nerves with shrunken viscera, whose uterus remains infantile, and who is the last of her family.

The relative frequency of the occurrence of neural exhaustion, as to occupations, seems to be, from Mr. Blarkus's notes, about as follows: Railway officials and manufacturers first in order, next come merchants and brokers in general, less frequently clergymen, still less lawyers, and more rarely doctors; while most distressing cases are constantly occurring among the over-schooled of both sexes.

Still another physical failing is making rapid progress among us. It is a condition of heart failure unassociated with appreciable pathological change, but sufficient to interfere materially with usefulness, and by weakening the powers of resistance to acute affections indirectly jeopardize life. It has been recognized abroad, and dubbed "the American heart." A writer in the *New York Medical Journal* recently, after compiling the mortality statistics for pneumonia during the last ten years, mournfully remarks that pneumonia and science have ever been at loggerheads, and that the former bids fair to vanquish its more pretentious foe.

When we saw our picked national protectors prostrated by a single day's exposure upon the streets of Washington, we felt like echoing one of the prayers of Moses in the wilderness. Oh! Lord, give us leave to pick a fuss with our neighbors lest thy chosen forget how to fight. Again, it is computed that hardly one man in ten in America is either thoroughly erect or well formed. This one steps too long, or cants forward or to one side; this one does not step long enough; another has one shoulder too high or too low; this one a flat, contracted chest; that one has small shoulders and large legs, this one the reverse, and so on through a long list of deformities, all serving to diminish strength and grace of movement, impairing usefulness, and even in many instances endangering the health of the individual directly by cramping or displacing some vital organ. In general terms, to sum up, we can say that we hear of general debility about as often as we hear of General Harrison.

You may ask, if these are facts, why the increase of average life? Perhaps it has, slightly, but pray consider the wonderful progress of the life-saving sciences during the past few years. Wealth and luxury may for a while successfully replace vigor. Vaccination has robbed small-pox of its terrors; prophylactic medicine is rapidly



acquiring power to stifle contagion in its infancy. Surgery now wrests from the hand of death countless lives hitherto irrecoverable. No famines sweep over our land, destroying whole communities. For over two decades, no war has decimated us, while through our portals flows a voluminous tide of immigration, mainly of an age in which life expectations are high. All these are compensatory.

The next question that presents itself after this cursory glance at existing conditions refers in natural sequence to the means of remedying these. The universal resort is to remedial agents; they are swallowed in enormous quantities. Medical science has been so recently evolved from a mass of empiricism, mysticism, fraud and witchcraft, that a palpable aroma of the past clings to it still. Astronomy has of course almost freed itself from astrology, but its association with fraud is still seen in the patent medicine almanac, about the only text-book of anatomy, physiology and sanitation found in the average American home.

Millions of dollars' worth of nostrums are swallowed yearly with no scientific basis for their administration, and only a blind faith in the representation that they possess some occult antagonistic power over something foreign and ulterior called disease, which must be expelled like the devils who went out and made their celebrated plunge into the refreshing waves of Gallilee. I believe the business of the charlatan surpasses by far that of the legitimate profession, and that the patent-medicine evil from a physical, if not a moral and intellectual standpoint, is one by the side of which King Alcohol's glories wane.

Turning to our educational system, where we ought legitimately to find the question receiving attention, we are doomed again to disappointment. Grave errors of omission as well as commission are present in this great scheme of which we are so proud. The ostensible purpose of education is to qualify for citizenship, and Herbert Spencer says the very first requisite of a good government is a nation of healthy, vigorous animals.

We however have no system of physical culture in connection with our schools, and resolutely exclude the class of studies that would tend to impart a knowledge of the laws of health, making them subservient to much that is ornamental. The mind is subjected to an iron-clad system of forced culture; the body receives no attention, and is left to take care of itself under the most adverse circumstances. Children of all types and capacities and hereditary tendencies are ground with machine-like regularity through the various steps of the graded schools and high schools, and are graduated with all the lessons of the actual responsibilities of life to be still learned by an oftentimes dear experience. Even our colleges are but little better: while many of them boast gymnasias and athletic clubs, only those who participate derive actual benefit therefrom; while Steele's Fourteen Weeks in Physiology, pushed through in six or about its equivalent, with nothing of anatomy and nothing of sanitation, are deemed all-sufficient for the practical knowledge of life. There is really an almost universal desire for instruction in this line as witnessed by the large audiences a skeleton and a manikin will always attract upon a public stage.

The first appeal, then, in relation to our subject would be for the more general dissemination of the sciences bearing directly upon physical preservation.

The second for a system of physical culture strictly applied. As the modification of temperament, the control of inherited tendencies and the relief of deformities is much easier during the pliant stage of childhood and youth, so in connection with our public schools is par excellence the field for obtaining the greatest physical results.

Each child should be examined and receive the appropriate exercise for his or her particular failing. For instance, a narrow chest and insufficient lung space

broadened and increased, stooping shoulders straightened, weak muscles brought up here and there, and so on.

The attempt being to establish organic harmony, promote general vigor by flushing all the body equally with blood, stimulating excretion and digestion by creating a healthy demand for food.

Let it be understood that at the quarterly or semi-annual examinations, reasonable improvement is to be expected in this respect as surely as in any other, and that the instructor is to be held responsible therefor.

When we see what McClaren has accomplished abroad and Dr. Sargent at home, we feel that every half-built, ungraceful, weakly boy or girl with no promise of manhood or womanhood about them, (as an editorial in a recent issue of a metropolitan journal characterized the whole school population of New York city as a class,) is the result of criminal neglect.

It is not alone with youth, however, that physical culture may be made productive of immense good. With men and women actively engaged in home and business affairs, an intelligent, systematic, careful bodily exercise will be conducive to health and success in a high degree.

Great misunderstanding prevails as to this matter. Advise a worn-out, brain-tired business man suffering from neural exhaustion to take a walk daily, not to and from his place of business, for the phantoms of worry and care pursue him over that accustomed route, but a walk for a walk. He will tell you he is too tired, or he has not time, and will ask you for bitters to increase his appetite and sedatives for insomnia and laxatives for intestinal atony; but the walk or perhaps a daily horseback ride would nine cases out of ten have produced the same result in a more effective and satisfactory manner. Advise him to use dumb-bells or clubs in quick, sharp exercise morning and evening: he will tell you his shoulders and arms are strong enough for his occupation, and he does not see the necessity of developing them uselessly. Yet at the same time that those muscles are being strengthened and developed his heart has become regular in its action, his excretions stimulated, his lungs all brought into play, and a much greater area of blood oxygenated; all the parts brought into action are flushed equally with blood, and the seat of active chemism withdrawn from nervous tissue, and more generally distributed. Another idea which commonly prevails is that complicated apparatus is necessary for physical development. Such is not the case. An elegant home gymnasium can be purchased in the market for \$15; and anyone with ordinary ingenuity can construct in a few hours and at a trifling cost a number of simple appliances in the bath-room or bed-room by the aid of which almost every muscle of importance in the body can be selectively exercised and developed.

For the average American woman the possibilities of physical culture are almost limitless. How many of them could handle a 30-pound dumb-bell without great distress? But many a youngster expects to be and is handled at that weight, or even greater. It is no wonder that skepticism as to marriage and maternity should be so commonly expressed. But let the woman devote even a half-hour daily in intelligent and systematic application to the task, and she can cover her back and arms with shapely muscles and relatively lighten her duties by increasing capacity for their performance. There is no sphere in life where it will not stand her in good stead and render her far more efficient. Nor is the benefit limited to her, but her posterity are blessed as well. Even the Sandwich-Islanders have a proverb: "That when the frame of the mother be strong, her sons make laws for the people."

Dr. Musgrave was prevented from being present at the convention. He sent his paper, which was presented to the convention, and will be found on the following page.

## OUR HOMES: THE CHOICE OF A SITE WITH REFERENCE TO SANITARY CONDITIONS.

BY R. C. MUSGRAVE, M.D., OF GRENOLA, MEMBER OF THE STATE BOARD OF HEALTH.

The subject before us necessarily carries with it a knowledge of the causes of disease; a subject which occupied the minds of our fathers in medicine for more than fifteen hundred years before Christ. From that to the present time, in every generation, there have been eminent physicians, who have used great diligence in searching for the causes without being able to come to a definite conclusion, except in a very few cases. However, they have not labored altogether in vain, for they have discovered that there are three principal causes, viz.: contagion, infection, and both contagion and infection; that is to say, that some diseases are produced by decomposing organic matter through inhalation of air contaminated by such decomposition; or by reception of such poison into the stomach, through our food or drinking-water, and transmitted to others by contagion; or in other words, some diseases are contagious alone, while others are both contagious and infectious.

As contagion does not enter into the subject of this paper, but belongs to that of sanitation and quarantine, what may be said in this paper on the selection of a site for a home will not take into its purview any means of escape from contagion; but will have reference to infectious diseases alone. I do not wish to be understood by what has been said in the foregoing conclusion, that sanitation is not a necessary means of escape from that class of diseases known as contagious; no, for I verily believe, to escape diseases of every name or order, good sanitation stands preëminent. Without it, the most healthy spot on this green earth will eventually, if inhabited, become impregnated with seeds of disease and death.

In order that we may arrive at just conclusions as to proper sanitation, so as to select and prepare a site for perpetual health, would it not be well to consult the Allwise, who made the earth and every creeping thing, the animals also, to live upon the earth, and the fowls of the air; and divided the waters above from the waters beneath, and gathered the waters which were beneath into their places, fixing their boundary, saying, "Thus far shalt thou go, and no farther;" that the dry land should appear, thereby furnishing sufficient space for every living thing that hath life, and that it should have it more abundantly. The waters to bring forth, develop, and continue to bring forth and develop the myriads of aquatic animals, from the great whale to the microbe—the last named so numerous that many of them are found in the smallest drop: all designed to live, move and obtain the proper pabulum necessary to their varied organism, found in the very element in which they exist.

As it is with aquatic animals, so it is with such as inhabit the dry land—He who knew the end from the beginning, designed that the earth should be filled. For He said: "Be fruitful, multiply, and replenish the earth and subdue it." That is, conquer it, make it subservient to your necessities. By a proper knowledge of the divine law in the disposal of the poisonous gases, which emanate from the animal surface and lungs, which is a means of life and health to the vegetable kingdom, which is carried to and distributed to them by Nature's own law, the atmosphere. Also the fæces and urine, delivered to Mother Earth properly distributed, will by Nature's unerring counsel be carried and distributed to the rootlets of the herbs, plants, vegetables and fruits, both small and great, and handed back to us in rich store, as pure as from the hand of God. So, then, the very things which were ordained for life, health, wealth, physical growth into perfect development if properly applied by man, if improperly applied will produce many of the ills common to man in every age or clime. Then why not utilize the obnoxious effluvia through the channels designed by nature, that they may be unto us a saviour of life, instead of, through our

mismanagement, furnish the seeds of disease and death? The subject before us, when properly considered, is not unlike the conclusion which Paul came to concerning the law of Moses, when he said: "I find that which was ordained unto life, proved to be death unto me." Just so with all the laws of nature: if strictly obeyed, thou shalt live; but if unheeded or broken, thou shalt surely die.

Medical research has discovered that water-pollution is the greater, if not the greatest, cause of disease and death than of any other single cause known. Then why will we, as intelligent people, continue through our present system of sewage to pour our filth and that of our animals into our adjacent streams and pump it back unchanged, except by greater dilution, to be re-used? Again and again we continue its circuit, used, and to be used, *ad infinitum*, producing a greater pollution by the hour, yes, we might say by the moment.

Not only are we through our present system of sewage continually augmenting the cause of ailments of every description to ourselves, but are sowing seeds of devastation and death to our neighbors.

As it has been asked by many eminent sanitarians of the present day, we again ask, has any incorporation, congregation or individual a right to deposit in his neighbor's well, spring or water-supply, used for his culinary or drinking, a poison that will surely destroy or injure his health or life, and say to him that he shall have no remuneration in the law for such murder? Or shall we say, as evil Cain when he killed his brother, when the Lord calls to us to give an account of our stewardship, and the question be asked, "Where is thy brother?" shall we say individually, "I know not; am I my brother's keeper?" Shall it be said to us as it was said to Cain: "Thy brother's blood cryeth unto me from the ground"? Shall we continue to poison our streams that health may abound? Shall it be said to us as it was said to the Jews by our Saviour: "As your fathers did, so do ye"? No! verily. But let him who selects a site for a future home, whether it be intended for a city, town, village, or farm, select a site having good natural drainage. If the selection is intended for a city, town, or village, the survey into lots should be adequate to the number of individuals equal to the largest known family, that there shall be sufficient terra firma to utilize all their excreta. Let us see well to it that our land-surface is not overcrowded. We should not follow an evil adopted by those of our large cities, building eight to ten stories upon a parcel of ground 25x100 feet, and filling it to its utmost capacity with human beings, thereby forcing a system of sewage as the only intelligent means suited to the condition. Listen! The Lord God planted a garden, and in it he placed the man whom he had created to dress it and to keep it. Would it not be well for us to follow the example given?

Then, in all the future, let each man select for his home a site which shall be as it was designed, the earth's surface; and not the third to the tenth story of some grand structure of human device, by which the limited surface becomes surcharged, even in spite of our best system of sewerage, so much so that in many places the small portion of earth beneath us becomes sterile, not being able to furnish vegetables of the baser sort, cutting off nature's means of purifying the air through the vegetable foliage, that it may be returned to him again, sweet and properly prepared to give life and health to the consumer. May we say: "Oh, man! turn from thy ways and filth, give ear to divine counsel, and thou shalt have life"?

This brings us nearer to our subject in question: "Our Homes; the Choice of a Site with Reference to Sanitary Conditions." Again we say, let him select the earth's surface, dig down into it and make for his house a sure foundation to extend above the surface sufficiently, with openings in it to allow free ventilation beneath the floor; bearing in mind that he shall have a title in fee simple sufficient to his prospective future demands, that he may plant thereon a garden of sufficient



area to use all the excreta and garbage furnished him. Better that he should have too much land surface than not enough. Upon such foundation let him construct his dwelling, with a view to good ventilation, and in no case should his dwelling be above two stories high. It matters but little which side of the river or stream he may select.

If the foregoing rules are observed, our rivers will furnish the waters of life clear as crystal; and in the midst of the streets on either side of the river will be found the trees of life, which shall yield more than twelve manner of fruits, furnished in such abundance that we may eat of them every month, and the leaves shall be for the healing of the nation. Then shall God wipe away all tears from our eyes; there shall be no more sorrow nor crying, neither shall there be any more pain.

In consequence of the want of time, the papers of Drs. Schenck, Bunn and Musgrave were, on motion, received without discussion.

The last paper of this session was the following:

#### THE MONEY VALUE OF A LOW DEATH-RATE.

BY FRANK W. BLACKMAR, PH.D., PROFESSOR OF HISTORY AND SOCIOLOGY, STATE UNIVERSITY.

"Public health is public wealth." The real value of a man to society cannot be exactly estimated in dollars and cents; the bare economic product of his energy may represent but a small part of his real worth to the community at large. If he be a producer of wealth, and a supporter of beneficent measures, of religion, of morality, of education, of a just administration of good laws; if he have great influence in society and lends all of that influence for the support of the best interests of humanity, who can estimate his real value? On the contrary, if he be a non-producer of wealth and a destroyer of social improvements, who can balance his account against society? A man's character and capacity are the tests of his value to the social organism, and these cannot be reduced to a money value. Yet it is true that the economic value of a man may be approximated, although it represents but a part of his real worth. We may estimate what his productive services are worth in the market, which will represent his money value.

There are three ways in which a man's economic value to a community may be estimated, viz.: (1) according to the cost of rearing him; (2) according to his market value; and (3) according to the amount of wealth he will add to the community before he dies.

The first method is that employed by the statistician, Fried. Kapp, who estimates that it costs from \$1,000 to \$1,200, in America, to rear a child to the age of fifteen years. Dr. Engle estimates that it costs \$1,500 to rear the average American male laborer and \$750 to rear the female laborer, or an average of \$1,125 for each laborer. Dr. Young holds that the estimate is too high, and that it will not take more than about \$800 to bring up the average American laborer.

But this test is not real, for after the money had been expended to rear a laborer, he might turn out worthless, or by a loss of sight or other accident reduce his economic value to zero.

In considering the economic value of an investment we consider the market rate of the investment, and not what it cost to produce it. A man may invest \$10,000 in a given business, but the real cost of producing the \$10,000 may have been an outlay of \$20,000. This method recognizes no value in experience, and considers the youth of eighteen to be of more value than the experienced man of forty. Again, the basis of this plan could rest only on the expense of raising at the least possible cost a healthful animal, with just sufficient intelligence to enable him to perform

his daily tasks well. And, finally, it may be said that the cost of rearing laborers is a sacrifice rather than an investment, and should be considered accordingly.

The second method is to value a man as a slave, and estimate accordingly his market price. Of course this reduces the question merely to the valuation of brute force, and does not consider the condition of the freeman who works with an intelligence in carrying out his own designs. Before the war a good slave sold in the markets at from \$800 to \$1,000. Since the emancipation of the slaves their real economic value has in many instances diminished more than 50 per cent.; but it was the policy of the proprietor of the slave to reduce food and clothing to the minimum of expense, and the productivity of labor to the maximum. The change of the economic value of a slave to that of a freeman is a doubtful quantity. In many instances he now, impelled by the lash of hunger, barely earns the minimum of food and clothing, while formerly, impelled by force, he did this and more, leaving a margin in favor of the wealth of the community. On the other hand, who can estimate the value of the freeman to the community, who by energy and frugality adds wealth and education to society?

The third method is scientifically correct. If sufficient data can be obtained, the real economic value of a laborer may be given. It is found by ascertaining the amount of wealth an individual will add to the community before he dies. It will be seen from this method at once that a person of poor health, unable to support himself, is an economic burden. The difficulty with this method is, that it necessitates a knowledge of the expectancy of life of each individual, his present earning capacity, and the cost of keeping him. If his expectancy of life is twenty years, his services worth \$200, and the cost of maintaining him \$150 per annum, then his economic value is \$50 per annum, or his money value is \$1,000. Dr. Farr represents that on this basis the value of the average agricultural laborer would be \$875. At this rate what is the value of a merchant, or a banker, or a statesman; and what is the value of the 65,000,000 of people in the United States, and what service is performed when the death-rate is reduced even one per cent.?

According to the most reliable life table at our command, that of Massachusetts, the expectancy of life of a person aged fifteen years is forty-six years. If the average yearly income of a person is one thousand dollars and it costs annually eight hundred dollars to live, then his economic value to the community is nine thousand two hundred dollars.

To lower the death-rate of a community so that life should be lengthened one year, would be an economic gain of two hundred dollars to the community in the case of this particular individual. According to the United State census of 1880, there were about six millions of the class above referred to. Applying our law to this group, and we find that the total gain to the United States by the proposed reduction of the death-rate would be about \$1,200,000,000.

The following table, though necessarily only approximate, will bring our thoughts a little closer to the determination of the real benefits to a community of the decrease in the death-rate. No allowance is made for the accumulation of wealth on account of the resources of nature, nor for the increase arising from accumulated capital, for the power to manipulate the capital and the labor necessary to develop the resources of nature are the only essential things to be estimated.

TABLE showing the estimate of the economic value of labor in the United States, computed on the basis of the expectancy of life of individuals of the age of fifteen years and upwards, and having an estimated wealth-saving capacity of \$45.\*

<i>Age.</i>	<i>Expectancy of life.</i>	<i>Population.</i>	<i>Capitalized value.</i>
15-20.....	45	6,014,242	\$12,178,849,050
20-25.....	41	6,102,822	11,259,706,590
25-30.....	38	4,896,920	8,373,833,200
30-35.....	35	4,042,572	6,367,050,900
35-40.....	32	3,600,498	5,185,717,120
40-45.....	28	2,962,572	3,732,840,720
45-50.....	24	2,507,334	2,707,920,720
50-55.....	21	2,207,256	2,085,856,920
55-60.....	17	1,687,722	1,081,107,432
60-65.....	14	1,325,058	834,786,540
65-70.....	12	751,050	405,577,000
70-75.....	9	584,648	236,782,440
75-80.....	7	334,878	105,486,570
80-85.....	6	265,290	59,690,250
Totals.....		37,482,682	\$54,615,135,432

It is seen from the above table that to increase the length of life of the ordinary individual one year, is to increase the wealth of the community to the amount of \$1,696,720,690; and the wealth-earning capacity represents, when capitalized, the modest sum of \$54,615,135,432. In this calculation the amount of wealth expended in rearing 28,000,000 persons under fifteen years of age is not counted, nor is the amount consumed in the support of charities and corrections; the basis employed is the annual amount of wealth saved.

Taking another view of the subject, and referring to the State of Kansas, we find that the number of deaths in that State in the year 1880 of all persons above the age of fifteen years, was 5,341; could the death-rate have been so reduced as to lengthen life one year, the amount of wealth saved by the labor of these persons would have amounted to \$224,302, and the capitalized value of the lost labor occasioned by death reaches the sum of \$6,208,658.

Were we to make a complete estimate of the real economic value of a low death-rate, it would be necessary to estimate the cost of interment and the amount of doctors' bills paid. This is an impossibility.

Vital statistics of England show that the death-rate of the army through sickness has been reduced more than one-half within the past century, and within the census-taking period the mortality of English males has decreased 2.88 per centum, and of females 7.62 per centum. This adds about one and a half years to the average male and about three to that of females. Or, as it has been estimated by Dr. Ogle, a million males will live 1,439,139 additional years, and a million females 2,777,584 years. (See forms for December, 1889.)

In the decade from 1861-70 there were in England, deaths from all causes, 22,416; and the following decade, from 1871-80, the total number was 21,272 per million inhabitants; this shows a decrease of 1,144 per million inhabitants. However, this great saving of life cannot be entirely attributed to medicine and sanitation. There are other causes for this change, such as a change of economic conditions, moral influences, and the better improvements in the comforts and conveniences of life; also, the increase in education has much to do with health. Without doubt the decrease in the death-rate is very great during the past ten years, but we have no statistics showing this.

\*The estimated total wealth of the property of the United States in 1870 was \$30,572,481,593; and in 1880, \$43,643,000,000. The wealth-saving capacity of each individual was (1870-1880) \$30, and for each individual above 15 years, \$40; for 1880-1890, it is \$34 and \$45 respectively. The average wealth in 1870 was \$780; 1880, \$870; and in 1890, not far from \$1,000 per capita.

It is estimated that the decline in the death-rate of all Europe is, in one hundred years, from the rate of 34 to the thousand to that of 20 per thousand living; that of England alone has fallen to 18.5 per thousand. As a rule, a low death-rate is indicative of a healthy state of the community, and consequently any reduction of the death-rate is an indication of the improvement of the health of the living. If we consider the vast number of sick that must be cared for at the expense of the well, we have another phase of the economic advantage of a reduction in the death-rate. The State of Kansas alone expended in 1889 the sum of \$401,578.15, in 1890-91, \$729,555.92 for the care of the insane, blind, the poor, and for other charities. This does not include county and municipal expenditures. One of the causes that render this aid necessary is improper sanitation. To increase health is to lessen this expense.

In our large cities a lack of proper sanitation is one of the causes of poverty usually brought on by sickness; and poverty and want breed crime; and all of this entails an expense upon the tax-payer and lessens the productivity of labor. Tax-payers must sooner or later pay for sanitation, or the lack of it, and they may as well enjoy at once the benefits of it. Dr. Farr has estimated that for every death per annum, two persons are suffering continuously from sickness. If this be true, for every life saved two years of sickness is saved. The expensiveness of sickness cannot be readily estimated otherwise than by a comparison of this kind. The loss of labor as well as the extra expenses of sickness must be reckoned. As the death-rate of the persons above 15 years of age was in 1880, 8.95 per one thousand, the annual loss from labor, occasioned by sickness is \$45,411,800. The cost of supporting and caring for upwards of a million sick persons is beyond calculation. The reduction of the death-rate 2 per cent. would save annually in labor from prevention of sickness about \$916,760 and reduce the number of deaths of the above class, 5,549.

It is to be noticed that the number of deaths in the United States from typhoid and malarial fevers is exceedingly large, and that this is occasioned in a great measure from lack of proper sanitation. That is, the number of deaths per thousand from the particular disease called typhoid fever is 31.21, and from typhoid-malarial fevers, 27.61 per thousand. It is also true that the deaths from these causes are more frequent in small towns, where water and drainage are poor, than in large cities, where better measures are necessarily taken for sewerage and water-supply.\*

Suppose a city has poor water and an hundred people die from the effects of its use: everybody is aroused and indignant at the condition of affairs which allows such sad occurrences, and there is sorrow and sympathy for the bereaved, and the city fathers feel, doubtless, that certain members of the community have been neglected. But who is to pay the community for the loss of these individuals, these producers of wealth? One hundred persons are gone from the community, the economic value of each of whom may be a thousand dollars. Who will replace the hundred thousand dollars? How much well-ordered inspection would it have taken to prevent such an occurrence? Would it have cost a hundred thousand dollars? But it may be said that these are small matters, and there are greater ones that need the attention of the administrator and law-maker. But it is this minuteness of administration which makes administration a success, and the lack of which makes it a failure. Public funds should be administered with more care than private funds, and public health as carefully preserved as the health of individual persons. In one sense, a man is public property, and his health and prosperity should be considered accord-

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\* See United States Census, 1880. Volume on Vital Statistics.



ingly. A wise administration will guard the health of an individual as jealously as it does any other economic property.

In considering the benefits of sanitary measures, civil authorities should think not only of the convenience and comfort of the people, but of the economic value of such measures. Indeed, the latter measure is after all the strongest basis for legislation. It may not always be easy to convince people that improvements should be made, or at least to get them to act in the matter, when only the convenience and health of persons of the community are affected; but once shown that it is a good pecuniary investment for the community as well as for themselves, and the cause for action is redoubled. To pave a street is generally considered in the light of a mere convenience; it should be considered as a matter of health and economy. If streets were paved, the water which usually stands in pools and gradually soaks into the ground, making mud and continued dampness, and leading to the unhealthy condition of the neighborhood, would be drained off into proper channels. We would have not only the economy of health, but an economy of the use of wagons and horses and time, which are no small items of expense to even a small community. Everything of this nature tends to lower the death-rate and increase the efficiency and the economic value of the human animal. To make a sidewalk is for the convenience of the foot-traveler. But who can estimate the real expense of a place without sidewalks, where the individual must wade through mud and water, with damp or chilled feet, endangering life and health? It is a good investment to have good sidewalks, on account of the economic value of man, as well as an inducement to citizens of the right sort to settle in the town. Health and long life are a source of wealth to a community, and should be carefully guarded and preserved.

PROF. SNOW stated that upon the opening of the University of Kansas, a chair of physiology and hygiene was established, with Prof. — as the first professor; but the appropriation failing, the chair became vacant. However, Prof. Snow himself gave instruction in these subjects for ten years. Last spring, Prof. Dyche was made full professor; and the course of lectures is quite full in the line of physiology and hygiene, together with a course in natural history, etc.

The convention then adjourned until the evening session.

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#### FOURTH SESSION.

LAWRENCE, December 5, 1889—7:30 P. M.

The convention was called to order by Prof. Snow, Vice-President. On motion, it was resolved that there should be no discussion of any of the papers this evening, in consequence of the number of papers and the time they would necessarily occupy.

This session was opened by very interesting music by the Lawrence Male Quartette.

The first paper presented was as follows:

#### PUBLIC HEALTH VS. PUBLIC WEALTH.

BY R. A. WILLIAMS, M. D., OF OLATHE, MEMBER OF THE STATE BOARD OF HEALTH.

*Mr. President, Ladies and Gentlemen:* Among the earliest example of laws given for the promotion of the public health were the unwritten laws of Lycurgus, the law-giver of Sparta, when he made the decree that the people should all eat in common

of the same bread and the same meat, and of such kinds as were specified, thereby giving the death-blow to indulgences that depleted not only their bodies, but their minds; for it removed the temptation to luxurious living, and thus eliminated one of the factors in the production of sickness. Children, even, were not allowed to be brought up according to the wishes of their parents, but were enrolled in companies and underwent severe discipline and exercise. Even the maidens were compelled to exercise themselves by running, wrestling and other physical sports and labors; and it taught them simplicity and a care for good-health. Thus was a people reared that for physical development has not been excelled by any other nation before or since, which proves that he was, in his time, the wisest sanitarian; and that was nine centuries before the Christian era.

From the history of the past, down through the dark ages to our present time, it has been proved that in every country where little attention was paid to the regulating and guarding of the public health, sooner or later the death-rate of that nation increased and its wealth proportionately decreased, and just the reverse took place when the death-rate decreased — then its wealth and prosperity increased. This is a fact that cannot be controverted, and as a proposition it remains undisputed, this being the matured history of the past. If as individuals, communities, states and a nation, we do not take this lesson to heart and profit by it, we are guilty of willful and woful ignorance, a crime against ourselves and an inability to analyze cause and effect.

And in this Christian and enlightened day, it was only by pointing out the misery and vice and the fearful loss of life and capital, and then only after several frightful epidemics had wasted the lives and wealth of the people and caused desolation and universal gloom to cover our land, that we endeavored to stay the silent, invisible demons of death — cholera and yellow fever. Even in the face of all this, it was a struggle of the sanitarians and philanthropists against the lethargy of the people, and the obstinacy, ignorance, prejudice, opposition and jealousy of short-sighted law-makers, before a foothold was secured in this country by a board of health, which was in 1869; and then the leaven began to work, and to-day nearly every State in the Union has its Board of Health.

Paradoxical as it may seem, it is evident that as a nation, in the mad rush for wealth, we lose sight of the value of human life as a money factor to the Government. It is a difficult problem that confronts us when we attempt to place money value on flesh and blood, brains and intelligence, and like Shylock, try to exact the pound of flesh in our thirst after that gold for which men sacrifice honor, friends, virtue, parent, child — in fact trample under foot everything on earth that should be dearest to them; yet when an appeal to love, friendship and principle has been known to fail because of short-sighted avarice, proof that want of proper sanitation depletes the pocket has been more successful. And this is as true to-day as it has been in the past.

Politicians and parties plead with the people to place them in power on the platform of reform, pledging themselves to reduce the taxes, ease their burdens and save them from impending ruin and financial disaster; and how quickly a party or government is defeated when the majority believe that their property is in danger and their taxes unjust, the history of the past has proved time and again, and to-day the sanitarians are endeavoring to educate the people to this stubborn fact, not only from the standpoint of humanity and human affections, but of dollars and cents.

Annually, the United States loses through deaths caused by preventable diseases, threetimes more than the total annual expenditures of the Government, which in 1888 were \$267,924,801. As intelligence is on the increase, so also is the value which we

place on life. Impossible as it is to give accurately what the average life is worth, as statisticians disagree, still we can come near enough for all practical purposes, including the infant, the child, the man in the vigor of life, the aged, the rich, the poor, the prince and the pauper.

Dr. Farr estimates that England and Wales lose annually ninety-five million pounds through the unnecessary waste of life and labor. During slavery days, negro infants sold as high as \$200, and able-bodied slaves brought from \$1,000 to \$3,000 each. Every emigrant that lands on our shores, capable of hard labor, is valued at \$1,000 to us. English statisticians give the value of a child at birth to be \$12.50; at five years of age, \$130; ten, \$260; and at twenty, \$2,000; and from twenty to forty, \$615, annually to the Government. Taking in the United States, the legal value placed on life which can be recovered through death caused by neglect of railroad corporations, I find in Illinois, Wisconsin, New York, New Mexico, Maine, Connecticut, Massachusetts, Wyoming Territory, and Missouri, \$5,000 is the limit. In the States of Kansas, Minnesota, Ohio, Indiana, West Virginia and Utah, ten thousand dollars is the limit; Nebraska, \$6,000; New Hampshire, \$7,000, making an average valuation in seventeen States and Territories of \$6,941,176. In the States of California, Pennsylvania, Montana, Rhode Island, Mississippi, South Carolina, Arkansas, Louisiana, Texas, Virginia, Alabama, Maryland, Delaware, Florida, North Carolina and Idaho Territory, there is no limit; the damage being left to the jury. From all that can be gathered from English, European, American statisticians and American laws, I believe that \$1,500 represents the loss that every death brings this Government; and though the estimate may be too high on infants or children, still it is less than the laboring-man is worth, and though high on the pauper and aged, it is more than balanced by the mechanic and professional man.

The man would be bold indeed who would place a value on the life of Morse, the inventor of the telegraph system, which has grown from an experimental line in 1843, so rapidly that to-day there are 735,906 miles of wire in the world, of which 190,000 are in the United States, the receipts last year being \$19,711,146. No estimate can be placed on the lives of great inventors, such as Edison, Bell, McCormick, Fulton; or statesmen and leaders of men, as Washington, Lincoln, and Webster. If every life is worth so much as an element of wealth to this nation, then, as a question of economy, this nation's first duty, even independent of any other phase of the question, should be to protect its treasury by protecting the people. Sanitarians the world over have repeatedly called attention to these facts, but like all great reformers, they have been obliged to contend against that class of humanity that despise science, but are simple and credulous, and believe in the efficacy of charms and prayers to ward off disease and death; or that the howl of a dog or the accidental breaking of a mirror is a warning that some member of the family will soon die.

I wish it were possible to impress the fact upon the minds of our Senators and Representatives that, incredible as it may seem, and appalling as the figures are according to Dr. John S. Billings's mortality table of 1880, out of a total population of fifty million, 750,893 deaths occurred, and from the poor facilities for securing complete returns, the Doctor's report was deficient in some places as much as 30 per cent. If this estimate was based on a population of sixty million, it would give 1,297,530 deaths in 1888; one-half of these were preventable. With the knowledge that sanitary science has, if it were granted the means and power by law, valuing each life at \$1,500 in this country, this makes a loss during last year of 640,765 deaths, which would equal 937,147,500 of actual immediate loss; taking an average of twenty-two days' sickness for those who were ill and recovered, it would make

14,272,830 days that were lost. At the low estimate of 50 cents per day for nurses and medicines and physicians' bills, this would be a cost of \$7,136,415; at 50 cents per day the loss of wages would be \$7,136,415, a total of \$987,421,330 annually.

It is only by comparison that we can realize that such a thing is possible. The cost in 1888 of running this Government, as I have stated, was \$267,924,801. The waste of life and attendant expenses, to say nothing of the mountains of misery with their dreadful results, was three times greater than the expenditures of this nation including interest, and more than one-half of the national debt for the same year, which was \$1,709,320.58. There is no question that is now before the people of such vital importance. The tariff is but a small matter compared to it, and if any party would dare for one year to have such a reckless disregard for the treasury as it has for human life, it would be wiped out of existence.

Ignorance and cupidity stand in the way of greater progress in sanitary science, and by the evidence of the past we must judge what the future has in store for us; accordingly as we heed or neglect its warnings we shall profit by them and not be such frequent witnesses of the deep grief that Malcom in Macbeth speaks of: "The grief that does not speak, whispers the o'er-fraught heart and bids it break," or continue willfully violating immutable laws with impunity of which we are at present guilty, and suffer in proportion.

In order to secure the confidence and coöperation of the public, we must show proof of what has been accomplished as a promise for the future. Although to many it would seem unnecessary, still there remains a large portion who are not aware of the benefits that have accrued through sanitary works and look on our claims as chimerical, or who from neglect fail to avail themselves of the opportunity to investigate facts which affect their very existence.

In the year 1865, Mr. Simon, of England, suggested that the time had come for attempting to ascertain the amount of benefits to the public health which had been derived from the works of sanitary improvement, especially drainage and water-supply, which had been already completed. He was authorized to institute the inquiry with the assistance of Dr. Buchanan. The result of the inquiry, which relates to twenty-four towns with an aggregate population of more than 600,000, was most satisfactory, and I take the death-rates per annum total and particular per 10,000 of general population for each of the compared periods, and as examples, I shall take two of the places, the cities of Merthyr and Ashbey, the latter containing 3,840 inhabitants and the former 52,778. In Merthyr, estimating from 1845 to 1855 before the improvements, the average general death-rate was 332, which was reduced by the works and sewers in three years, from 1862 to 1865, to 262 deaths. General death-rate, after excluding small-pox and infantile epidemics, from  $92\frac{1}{2}$  to  $21\frac{1}{2}$ . Deaths from typhoid fever, from  $21\frac{1}{2}$  to  $8\frac{3}{4}$ , a reduction of nearly two-thirds from that dread and unnecessary disease alone. Cholera in each of the three epidemics, 1848 and 1849, 267; 1854, 1884 and 1886, 20. Diarrhea, so called, excluding cholera, from  $11\frac{1}{2}$  to  $6\frac{1}{4}$ . Phthisis,  $38\frac{3}{4}$  to  $34\frac{1}{4}$ . Phthisis and other pulmonary diseases of women from 15 to 55 years of age,  $15\frac{1}{2}$  to  $13\frac{3}{4}$ , and of infants under one year of age, from  $80\frac{1}{2}$  to 61. This much was accomplished in the short space of three years in a city of over 50,000. Now take the city of Ashbey—of which we have many of similar size in Kansas, over three thousand, not one of which to my knowledge has a system of sewerage, but as they increase in size gradually depend more on open cess-pools, which sooner or later are death-traps to either the families that use them or their neighbors. In Ashbey, during the same length of time, with three years of sewerage system, the general death-rate was reduced from 216 to  $202\frac{1}{2}$ . General death-rate, after excluding small-pox and infantile epidemics, 213 to 184. Typhoid fever  $13\frac{3}{4}$  to  $5\frac{3}{4}$ . Phthisis and other pulmonary diseases of women 15 to 55 years of



age, from 16 to 13. Infants under one year of age, from 48 to 31; and Dr. Buchanan claims cholera to have been rendered practically harmless. In Merthyr, during 1848 and 1849, two hundred and sixty-seven people died. In 1854, 1884 and in 1866, only twenty deaths occurred during that epidemic.

Dr. Thorne stated, in the International Conference in 1885, that England alone had spent 27,000,000 pounds since last conference in Vienna on improvement of local sanitation, and that this enormous expenditure had been repaid her, not only in her having escaped from epidemic invasion by cholera, but in the great diminution of loss of life from such endemic diseases as depend on local unsanitary conditions, as typhoid fever. He maintained, and justly too, that this would not have been the case had it continued like other nations to trust to quarantine, and that it would be a bad day for England should she ever come to think that a period of five days' observation could be of the same value as local hygiene on which she now confidently relies to prevent cholera epidemics from taking root.

Dr. John Billings states in his report that diphtheria and enteric fever are more prevalent in small towns and rural districts which have no general water-supply or system of sewerage, but obtain their water from springs and wells, and observe the usual custom of storing excreta in cess-pools or vaults. Under the influence of local sanitation, the expectation of life has been doubled in some cities during the last two centuries, and the death-rate reduced in London alone from 50 in the 16th century to 22 in the present. This is the result of hygiene in its infancy, and this fact alone should present itself forcibly to the great life insurance companies of the United States, for the small reduction of even one per cent. in the death-rate means a large increase in their profits; but should the reverse take place, and the death-rate become greater and continue to do so, then it would be only a question of time when they would be wiped out of existence. In 1887, the amount of policies in force was \$2,842,061,135, and their total expenditures were \$99,115,389. It can therefore be readily seen how deeply they should be interested in public health. As a shrewd business investment, they could well afford to organize and expend a million dollars annually for the dissemination of knowledge on this subject, and for the purpose of influencing public opinion to cause the National Government to adopt thorough and efficient health laws and furnish appropriations in proportion to its importance. In fact, they could afford to have a lobby in Washington and every State in this Union, and every dollar thus expended would return with increasing individual health, happiness, and public prosperity. But it will take concentration of purpose to arouse the apathy of the ordinary legislators on this vital subject, for they, in common with other people, are naturally suspicious of those that urge the passage of stringent health laws, having never given the subject proper attention that it deserves in the economy of the Government. Hence, when philanthropists, scientists and hygienists ask for bread they are often given a stone, for fear there is some ulterior motive connected with it, or imposing on some of the liberties of the people.

It is exceedingly difficult to dispel prejudice from the minds of those who have not the faculty of readily discriminating between so-called reforms that are only the result of minds which are narrow and false in their judgment, and those that are essential to our social and physical existence. It matters not through what form or agent the destruction of life takes place, it does not lessen the money value to the public, but cognizance is taken of it only by the law when it occurs through the negligence of individuals or corporations in providing for the prevention of accidental injuries and deaths. But when it occurs during the progress of some malignant fever, the result of the vice of uncleanness and not unfortunate fatality or the hand of Providence, which is so commonly accepted, no attempt is made to hold either local or state governments responsible. But let a foreign power insult us by

seizing or destroying one of our humblest sailors from the deck of the poorest craft that sails the seas, how quickly the news of insult would be heralded from the rocky coasts of Maine to the Dakotas, and from the Gulf of Mexico to the Pacific slope; how every cheek would flush with loyal blood, driven by quickened heart-beats from loyal hearts, and the administration would be compelled by public sentiment to demand indemnity and reparation, which, if refused, would be obtained by force of arms. But if this same man should breathe foul and poisonous air produced by the neglect of local authority to clean up some pestilential and filthy street or dwelling, the pernicious effect of which prostrated him on his bed, through agonizing days and nights, with hot and feverish breath, daily suffering the torments of death from unquenchable thirst and excruciating pains, and slowly but surely wasting away, while loving wife with sad and heavy heart and tearful eyes, her lonely vigils keeps while seeing her loved one passing over the river, and hearing his dying, gasping words of love, the crime would be as great as if killed by some foreign foe; the awful, piercing shrieks, and dull, dull moans of broken-hearted wife, as, stunned by the blow, she clasps her children in her arms and arouses only to find toil, privation and poverty to be her lot for the remainder of her widowed days, are a part of the tragedy, and should be properly charged up with the death of her husband, against the public which neglects proper sanitation. But let me ask, did the condition under which his existence ended, lessen the value of his life the fraction of a dollar? No; but it imperilled the health and lives of all who attended him during his illness. This is not a fictitious example, but a stern reality of daily occurrence because of the failure to obey the laws of cleanliness and the perversity in disobeying them.

It has been said, "familiarity breeds contempt," and it appears to be the case, even when it comes to severing the ties of human attachment; for it is only when some one of the elements rises in its fury and destroys human lives by the score in a short space of time, such as the Johnstown horror, or some scorching, withering epidemic, such as we had in Jacksonville, Florida, last year—then is the public indolence changed, and how rapidly the security and revenues of the stockholder of railroads and other corporations decline, and commerce becomes paralyzed under the blasting influence of such epidemic. I believe even the report of one case of yellow fever in the Southern States would temporarily depreciate stock value a million dollars, and it would be some time before the uneasiness caused would wear away. We have had ample proof of that in the last two years. Take the condition of the city of Memphis prior to the epidemic of 1879. By a fatal error it was without proper drainage and water-supply; the soil was saturated and surrounded with filth and stagnant pools, into which all kinds of waste material had been thrown, making seething caldrons from which the atmosphere was loaded with its poisonous effluvia. Its condition was a challenge to all forms of disease, but being burdened with a debt of \$5,000,000, an assessed valuation of \$120,000,000, the State Board of Health was refused, by the Legislature, authority and means to enforce intelligent opposition to the already predicted misfortune. Then Memphis easily became a prey to the demon of fever, and only by depopulating the city from 45,000 to 15,500, in a single week, were many lives saved; and of those that remained, 90 per cent. were sick, and over 4,000 deaths occurred. The result has been that Memphis, having learned a lesson at a great sacrifice of the lives and property of its citizens, stands to-day without a peer in regard to sewerage and cleanliness, resulting in lessening the death-rate from other causes a large per cent.

Health laws are of inestimable value to the laboring class. All who are obliged to live in rented property, especially in large cities, where advantage is so frequently taken of their condition, and promiscuous overcrowding in ill-constructed dwellings is the result—this class should be especially alive to their importance, and should

oppose those who, for increased revenues, are willing to thrive on the flesh and blood of their fellow-men. In such places, disease and epidemics are often propagated.

Let us inquire as to what has been accomplished at home, in Kansas, the State that has always been in the van of reform. I fear that this comparison will not prove that we have given this one much attention. Let us compare the appropriations for the State Live-Stock Sanitary Commission and the State Board of Health during the last three years. The amounts appropriated for and expended by the Live-Stock Sanitary Commission were as follows:

	<i>Appropriated.</i>	<i>Expended.</i>
1887 .....	\$10,000	\$8,540 51
1888 .....	3,000	2,974 93
1889 .....	3,000	2,999 58
Total.....	\$16,000	\$14,515 02

Making a total appropriation for three years, of \$16,000; total expenditure, \$14,515.02. And that was a wise and money-saving law, and undoubtedly well repaid our State in the preservation of the cattle and beasts of burden, and averted considerable loss of capital.

Now then, what was appropriated during these years for the prevention of epidemics among the inhabitants of this grand State? During the three years ending July 30th, 1889, the amount was \$13,500, making a balance in favor of the beasts of the field against our wives, children and friends, of \$2,500—a comparison that is ridiculous, but nevertheless true. That was the amount set aside to guard our firesides and all that makes life worth living; those we love, who if taken from us would take out all the sunshine, happiness and music of life. We annually pay the enormous tax of 3 mills per capita, estimating our population at one and one-half millions. Can it be possible that this magnificent sum trembled in the hands during our last session of so-called retrenchment? The records prove it to be true. Will any legislator, after investigation, be willing to stand on this platform of retrenchment and include the wiping-out of a State Board of Health as a matter of economy, and be willing to confront his constituents and tell them he had voted to relieve each person from being obliged to pay a tax of three mills annually, in order that he should be taught the wisdom of obeying the laws of nature, and that he can be more easily exposed to disease and death? Witness the spectacle of the black, silent Angel of Death with outstretched wings, hovering over the deliberations of our Senate Chamber, watching with ghoulish glee, hoping to see the health appropriations drop into the scale of a false economy; but, thanks to the white guardian Angel of Life, better judgment prevailed and the slight protection was not taken away.

The records, since the organization of the State Board, will convince the most skeptical that although, as we might say, having only nominal existence, doing the best with what means they had at their command, still if but three lives annually have been saved to Kansas, it has been a wise investment, and gives great promise for the future. Whose child or whose life has been saved? We cannot tell. It might have been yours, Mr. Senator, or yours, Mr. Representative. Only in the delirium of a hot and hasty debate would there be a man unreasonable enough to refuse such an important department of the State its just dues; a department that is of greater vital value than any other, and should be considered and treated accordingly.

I make the appeal to our law-makers in the name of that bright-eyed, sturdy boy, on whose laughing cheek health has printed a rosy tint that no artist has ever approached; or the sweet, blue-eyed babe, whose innocent eyes and tender smile are sweeter by far than any other heavenly gift; and whose gentle, cunning ways are



daily weaving their course about the tendrils of your heart; and in the name of her who has given up home and friends to follow your fortunes and misfortunes; she, whose love is dearer than life itself, a loving, trusting wife, in defense of whom you would be willing to shed the last drop of life's blood. If death should take these away, the moulten lead of sorrow would be poured into your heart, and never again would the sun shine so brightly, the sky look so blue, birds sing so sweetly, grass look so green, or flowers bloom so fair. In the name of all these, I ask you, give to our homes the benefit of wise laws on this subject, which will result, with mathematical precision, in the reduction of the mortality of our State. You would not equip an army to defend our borders against foreign invasion with flint-lock muskets and expect it to combat successfully with an enemy equipped with the improved modern weapons of warfare. It is true that they might occasionally kill an enemy, but yet invasion would result. The State Board, with the meager means at its command, is fighting an invisible but far more certain and destructible foe than foreign invaders—disease and death. Give us the influence of the press, without whose support in the present day it is impossible to succeed in any undertaking that governs the interest of the people, and before the next session of the Legislature public sentiment would be so moulded that a rivalry would exist between our legislators to see who would first introduce a bill that would embody the meaning which Emerson meant to convey when he stated that the "first wealth is health."

The following paper was then presented:

#### POLLUTED WATER.

BY PROF. F. H. SNOW, OF THE STATE UNIVERSITY.

Pure water, the chemical compound consisting of two atoms of hydrogen and one of oxygen, does not exist in nature. By reason of its solvent power it is always impregnated with various inorganic impurities. Where these exceed a certain number of grains to the gallon, the water ceases to be a good drinking-water. The purest natural water is that of the River Loka, in Sweden, which contains only one twenty-fifth of a grain of solid matter to the gallon. The water of the Colorado streams of the mountains contains from 2 to 3 grains per gallon. The Croton water supplied to New York city contains a little more than 4 grains to the gallon. Some of the best spring-waters contain from 14 to 20 grains. A water wholesome to drink should not contain more than 30 to 40 grains of inorganic matter to the gallon. The water of the Kansas river contains 31 grains to the gallon, as has been determined by Prof. E. H. S. Bailey, of the University of Kansas, and is, therefore, so far as inorganic impurities are concerned, a good potable water.

But there is another class, and so far as public health is concerned a more important class, of water impurities, which come more properly under the jurisdiction of the biologist than of the chemist. These are the organic impurities, many of which chemical analysis is powerless to reach. It might be supposed that cistern-water, coming from nature's own distillation apparatus, would be free from such contaminations as might be expected to exist in our shallow wells and in our river-courses. But the originally immaculate raindrops, even as they pass through the air and down the roofs of our houses, gather multitudinous particles of vegetable tissues, epithelial scales, hairs of various animals including man, fibers of cotton and wool, silk and linen, scales and legs of insects, fragments of feathers, and innumerable seeds or spores of microscopic plants. The germs of many contagious diseases—as cholera, malarial fever, yellow fever, and typhoid fever—have hitherto escaped the ablest chemical analysis. These most dangerous of all water impurities elude



the observation of the chemist, because the acids and other reagents employed by him destroy the embryonic forms of animal and vegetable life. Waters which are apparently clear and limpid, and which on chemical analysis would be pronounced to contain but a harmless trace of organic matter, may yet contain millions of pathogenic germs, and be the means of communicating disease and death to those who drink them. Although chemical analysis may discover no considerable amount of impurity in a water, it is not therefore necessarily safe to drink.

In determining the true character of a water, the work of the chemist must be supplemented by that of the biologist; the microscope and culture apparatus must be summoned to the aid of the acid and test-tube. The proposition that most if not all infectious diseases are caused by the growth of microscopic organisms, is nowhere looked upon as an absurd speculation, as was the case a few years ago. A recent investigation of the position of twenty-eight of the leading American medical schools, in reference to the germ theory of disease, indicates the almost universal acceptance of this theory. The biologist and the physician are rapidly coming to occupy the same ground upon this question.

For the purposes of this paper a polluted water is considered to be any water which contains the germs of an infectious disease. Typhoid fever may be taken as a typical sample of a germ disease. To the best of our knowledge, this disease does not arise spontaneously, but is produced by the taking into the system of water which contains the germs of typhoid. The disease cannot occur independently of the germ which produces it. This germ *can* be kept out of our drinking-water, and *should* be kept out at any cost of money and of care. The typhoid germ finds a favorable situation for its development in the human intestines. Hence the excremental discharges of the typhoid patient are charged with the deadly virus, and unless promptly and thoroughly disinfected become the source of danger to the community. Let the experience of the town of Plymouth, Pa., in 1885, prove a warning to every community to guard its water-supply from all contamination by sewage. The town of Plymouth is favorably situated for health, being on a dry hillside, well exposed to wind and sun, on the banks of the famous Susquehanna river. Like most towns of its size, it has no system of sewerage, and many of the vaults or closets are very imperfectly constructed. Every year when the winter breaks up and the snow melts, a large amount of decaying matter which has been thrown out during the winter by the housekeepers, is deposited on the ground and pollutes both water, soil and air. Most of the wells are shallow, owing to the peculiar geological formation of the region. These wells are generally abandoned, the houses being supplied with water by the water-supply company of the place. This water is gathered into reservoirs from mountain springs and from an artesian well. It is ordinarily excellent, but is liable to be polluted during freshets by surface-water, which carries to the streams whatever filth it gathers from the soil in its course to the streams. About 75 feet from the bank of a small mountain stream which supplies the reservoir, stands a dwelling-house, in which, during January, February and March, 1885, was located a case of typhoid fever. The attending nurse was in the habit during each night of carrying the excreta from the patient and depositing them on the snow-covered ground toward the stream. The last week in March the snow melted and a great part of the three-months accumulation of typhoid dejecta was suddenly swept into the stream and carried to the reservoir as quickly as a man walking fast could have reached it. In fifteen days from this time the epidemic began. There were over 1,200 cases of the fever, and over 100 deaths, out of a population of 8,000. None of those families suffered from the disease who used well-water or river-water, though neither was of the best quality.

The original patient, the unwitting cause of all this suffering and death, recovered from the fever. The lesson we learn from this case is that pure water is of the greatest importance; that even pure water may become fouled without its being known to the consumer, and that those persons who have charge of patients ill with such a dangerous disease as typhoid fever may cause a great many deaths by being careless as to the disposal of the excrement.

At the annual meeting of the American Public Health Association at Milwaukee in November, 1888, the committee on the pollution of water-supplies emphasized its belief in the harmfulness of sewage in waters used for drinking purposes. Chemical analysis was shown to be in most instances inadequate to the detection of sewage, unless the sewage was present in unusual quantity, or the water unusually free from other organic matters, and the conclusion was reached that the inability of the chemical methods is of no practical importance, as the presence of sewage in the water-supply can be determined by the sanitary inspector; and further, that for protective purposes the knowledge that sewage enters into the water is all that seems to be required, because where there is sewage there is danger of typhoid infection.

Thirty thousand people die of typhoid fever annually in the United States. Yet it is safe to say that every one of these deaths might be prevented if it were possible to entirely exclude excremental sewage from the drinking-water. Many of our public water-supplies contain sewage, and its harmfulness in a general way is unquestioned even by those who have a financial interest in them. Yet there appears to be a hesitancy to acknowledge the real, the specific danger. Typhoid fever is present in all our cities, giving annual death-rates of from 15 to 100 and over in every 100,000 of the population; but in the enumeration of its causes, its prevalence is ascribed to many unsanitary conditions before mention is made of the public water-supply. It is admitted in certain local epidemics to be propagated from *wells* which have become infected by an infected sewage, but the sewage in the public water-supply is seldom considered other than as a sentimental objection to the use of the water. It is admitted in many instances to arise from leaks in the plumbing of houses, by which exhalations from infected sewers reach the interior of the dwelling, but the water-supply into which the sewage of these very sewers is poured, is used without a thought of its deadly qualities. Sometimes, as in the case of Plymouth, Pa., the fact is *forced* upon the public mind that a public water-supply has as little disinfecting power over the germs of typhoid fever as the private water-supply of an infected well. Health officers condemn the *well*, and generally it is closed as soon as it is found that sewage percolates through its area of drainage. They should condemn the *public* supply on the same grounds.

The introduction of a water-supply into a growing city is ordinarily only a question of money. It is often said to be beyond the power of money to purchase health, but the sanitary student can readily demonstrate that in many instances this is not the case. Money expended in the distribution of a wholesome water-supply will purchase health for the thousands who otherwise fall victims to the fever which is endemic in our cities and towns. Typhoid fever is a disease to which every one is exposed who drinks contaminated water. The susceptibility to it is inherent in our constitutions, and so far as known immunity can be purchased only by submitting to attack. Danger is as present with us in the daily routine of our peaceful lives as on the battle-field, only that the embodiment of evil is an invisible and intangible germ instead of a fast-flying bullet. Danger flows beside us in our streams, in our water-mains, from the taps in our houses. The germ of the disease may not be in this pitcherful or in that, in this tumblerful or in that, but it will find us some day if we continue to use the water which contains it. In a town of 50,000 inhab-

itants, one victim is taken daily, and as the average duration of this disease is about a month, there are always in that city 30 persons whose lives are unnecessarily trembling in the balance.

In this country, the relation between the distribution of a water which contains sewage and the prevalence of typhoid fever can be readily observed by anyone who studies the mortality returns of our cities in connection with the character of their water-supply. The records in many instances are full and trustworthy for the past twenty years. Brooklyn, New York city, Boston, Cincinnati, Philadelphia, etc., have a death-rate proportioned to the quantity of sewage which enters their water-supplies. Where the water-supply, as in Brooklyn, is free from sewage, the death-rate is low, about 15 to the 100,000, these cases being due to indirect infection and other local causes. When care is exercised in excluding sewage from the water-shed which furnishes the public supply, there is a corresponding freedom from typhoid fever, as in New York city, which has a rate of 25, and Boston, which loses about 40 annually for every 100,000 of her people. In Philadelphia and other cities, in which less attention is given to the public supply, the typhoid death-rates are correspondingly increased. Moreover, the records of these cities give interesting information when viewed in connection with the history of the water-supply. The city of Baltimore has had a steady diminishing rate since its water-supply was first introduced, and this decrease has been more notable since 1880, when the supply was largely extended. And this same city of Baltimore shows that its improved condition is not due to the introduction of a system of sewerage, but to the use of a purer water than was formerly furnished by its infected wells. Ordinarily a sewerage system and public water-supply are contemporaneous improvements, and heretofore any benefit to the health of the community has been credited to the sewerage, although it seems as if the inflow of a wholesome water had really more to do with the lessened death-rate, for the small typhoid rate of New Orleans cannot be attributed to the sewers of that city, since it has none; but it may be attributed to the water-supply, for that consists of rain-water which is free from sewage, inasmuch as the cisterns in which it is stored are not sunk in the soil, but raised considerably above the surface.

Testimony of a similar character has recently been developed by the experience of Vienna, in Austria. In that city, from 1851 to 1874, well-water of an impure character was used to a large extent in addition to a systemized supply from the Danube. During this period the annual deaths from typhoid fever ranged from 100 to 340 in every 100,000 of the population. In the last-mentioned year (1874) a spring-water was introduced, and the death-rate from typhoid fever fell immediately to 50. Since then, by the disuse of impure wells and the extension of the new supply, the rate for the past three years has fallen to 11; and inasmuch as the sewerage system was in existence during the period of high death-rates, the fall since 1874 from 340 to 11 is necessarily referred to the use of a water which is free from sewage. According to Professor Nothnagel, typhoid fever has become such a rarity in Vienna since the introduction of the spring supply of drinking-water, that when a case occasionally comes to the hospital from outside the city, he shows it to the students as one of unusual interest.\*

The source of the water-supply for the towns and cities of Kansas should receive immediate attention from the friends of sanitary science. We are not so situated as to be able to obtain pure water from mountain streams or from large unpolluted lakes. The wells in our towns are rapidly becoming polluted by seepage of sewage from cess-pools and by filth from the surface-soil. No inconsiderable number of

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\* See report of Committee on Pollution of Water-Supplies.



our towns have already erected water-works, by which water is supplied directly from the streams. But these same streams are also made the dumping-ground for the sewage of the towns that drink the water. The city of Topeka, when its sewerage system is in perfect operation, empties into the Kansas river a daily mass of at least 100,000 pounds of human excrement. This 50 tons of daily filth is carried down the stream whose waters are offered to the citizens of Lawrence by the City Water Company for domestic use. The question at once arises, what becomes of this immense mass of corruption? It is claimed by those financially interested in the success of the water-works systems and by many chemists who are not also biologists, that the water of a river which has received the sewage of a town some miles higher up, is purified during its course to such an extent that it may be used with impunity as a drinking water. Dr. Frankland, the eminent English sanitarian and chemist, makes the following statement:

"There is no process practicable on a large scale by which that noxious material [sewage matter] can be removed from water once so contaminated, and therefore I am of the opinion that water which has been once contaminated by sewage or manure matter is thenceforth unsuitable for domestic use."

In another place he informs us that about four-fifths of the nitrogeneous matter contained in fresh sewage is decomposed before the sewage, after a run of two or three miles, emerges into the river, and that the remainder is decomposed with extreme slowness afterwards. In the first report of the English Rivers-Pollution Commissioners analyses are given which show this fact with tolerable clearness. It appears that when the temperature does not exceed 63 degrees Fahr. a flow of between 11 and 13 miles produces but little effect upon the organic matter dissolved in the water. The Commissioners give the following summary of results:

"It is thus evident that so far from sewage mixed with twenty times its volume of water being oxidized during a flow of 10 or 12 miles, scarcely two-thirds of it would be so destroyed in a flow of 168 miles at the rate of one mile per hour, or after the lapse of a week. Thus, whether we examine the organic pollution of a river at different points of its flow, or the rate of disappearance of the organic matter of sewage when the latter is mixed with fresh water and violently agitated in contact with air, or finally the rate at which dissolved oxygen disappears in water polluted with 5 per cent. of sewage, we are led in each case to the inevitable conclusion that the oxidation of the organic matter in sewage proceeds with extreme slowness, even when the sewage is mixed with a large volume of unpolluted water, and that it is impossible to say how far such water must flow before the sewage matter becomes thoroughly oxidized. It will be safe, however, to infer from the above results that there is no river in the United Kingdom long enough to effect the destruction of sewage by oxidation."

In his evidence, given before the English Commissioners, Sir Benjamin Brodie makes the following statement:

"I believe that an infinitesimally small quantity of decayed matter is able to produce an injurious effect upon health. Therefore, if a large proportion of organic matter was removed by the process of oxidation, the quantity left might be quite sufficient to be injurious to health. With regard to the oxidation, we know that to destroy organic matter the most powerful oxidizing agents are required. We must boil it with nitric acid and chloric acid, and the most perfect chemical agents. To think to get rid of organic matter by exposure to the air for a short time is absurd."

In the Sixth Report of the Rivers-Pollution Commissioners, the conclusions of the previous reports are emphasized and extended, as follows:

"As to the possibility of rendering polluted water again wholesome:

"1. When the sewage of towns or other polluting organic matter is discharged into running water, the *suspended* matters may be more or less perfectly removed by subsidence and filtration, but the foul organic matters *in solution* are very persistent. They oxidize very slowly, and they are removed only to a slight extent by sand-filtration. There is no river in the United Kingdom long enough to secure the oxidation and destruction of any sewage which may be discharged into it, even at its source.

"2. Of all the processes which have been proposed for the purification of sewage, or of water polluted by excrementitious matters, there is not one which is sufficiently effective to warrant the use, for dietetic purposes, of water which has been so contaminated. In our opinion, therefore, rivers which have received sewage, even if that sewage has been purified before its discharge, are not safe sources of potable water."



The above statements refer to the *lifeless* organic matter undergoing decomposition in the river-water. They do not refer to the *living* organic matter—the bacterial germs which are the direct cause of typhoid fever, cholera and other similar diseases, and which are far more dangerous than the *dead* organic matter. These living germs are not oxidized so long as they continue to have life. Like other living organisms, they consume oxygen instead of being consumed by it. These microscopic beings are very tenacious of life. They are not destroyed by freezing, but remain frozen in blocks of ice in a dormant condition, ready to resume activity and malignity when communicated to our ice-pitchers in midsummer. Instead of being destroyed by weak acids, as one would suppose they ought to be, they thrive vigorously in 2-per-cent. solutions of sulphuric acid and hydrochloric acid, and finally destroy these acids by depriving them of their oxygen, as has been observed in my own laboratory. They remain unharmed in chloroform and carbolic acid, as has been noted by other observers.

Who then will undertake to say that these death-dealing microbes are destroyed in passing from one town to another in the waters of our Kansas rivers? In 1886, a woman from a cholera district entered a valley in Spain, which was free from the epidemic. She washed her clothes in the stream and half-depopulated with cholera the towns in the region below, while not a case occurred above.

A biological examination of the waters of New York Bay in 1888, disclosed the fact that although these waters are in continual motion from the waves and tides and are constantly aerated, the number of bacterial organisms varied from 4,500 per cubic C. M. at Narrows, to 11,700 per cubic C. M. off Swinburne Island. If these had been pathogenic bacteria instead of the beneficial filth-destroying *bacterium germs*, New York city would hardly have escaped a severe epidemic visitation.

On November 12, to test the power of ocean-water to sustain the vitality of the cholera microbe, test-tubes of sterilized sea-water were inoculated with pure cultivations of this microbe. It was found that these organisms retained their activity and reproductive power for 69 days.

We have now presented a sufficient array of facts to justify the belief that the germs of infectious diseases are not oxidized or destroyed in being carried by our river-waters from one town to another. The conclusion of the whole matter would seem to be that if our river-waters are to be used for drinking purposes, they must *not* be used as a receptacle for sewage filth.

I will bring this paper to a close by reading extracts from recent letters received from my friend Dr. S. W. Williston, Professor of Anatomy in Yale Medical College, and Health Officer of the city of New Haven:

"I do not think that water polluted by sewage can ever be sufficiently purified by filtration—nothing short of prolonged boiling will suffice. Chemical tests are insufficient to decide the potability of water—the evidence is negative only. Of course, the question in Lawrence must be, 'How much sewage goes into the water, and how little water is there in summer?' Remembering how low the river sometimes gets, and remembering how thick the population is becoming in Kansas, I certainly believe that the dilemma will very soon present itself to your city, either to secure some legislative action, to stop all sewage discharge into the river, or abandon it as a source of water-supply. If it is absolutely necessary that the river-water be used, then your city cannot begin too quickly to agitate the subject. It is hard enough to prevent further defilement, but it is vastly harder to correct river-pollution abuses, when they already exist. It is, fortunately, not a question in Connecticut of the *potability* of the water, but of the effect of polluted streams on the health.

"River-pollution must be looked at in two ways. If it is necessary, or even advisable, to use the streams as a source of domestic supplies, then every particle of pollution, especially sewage, cannot be too carefully guarded against. In Connecticut, river-water is very rarely used for that purpose. But Connecticut, with its fifty or sixty inches of annual rainfall, and numerous brooks and springs, is very different from Kansas. The larger cities, or even the smaller ones, in your State, will have to depend upon its streams for potable water, unless filter galleries are used; and Kansas offers, I should think,

every facility for their use. (Manhattan recently spent considerable money tunneling out into the river for water, when a filter gallery could have been built at much less expense, insuring uncontaminated water.)

"Wherever water is not taken directly from the streams—and it should not be when it can be avoided—the contamination from cities under ten thousand inhabitants will scarcely injure such streams as the Blue and Kansas. Or, to state it better, the permissible pollution will depend upon the minimum flow, permitting towns to reach a certain sewage concentration before requiring the erection of expensive precipitation and filtration plants. Kansas will be wise if she enters into the subject at an early day; the problems have become serious in New England. But there are many especial problems, dependent upon rainfall and climatic conditions, that Kansas will have to solve for herself. In the East, precipitation followed by intermittent filtration seems the best way of sewage disposal, as at Orange, N. J.; but it is not at all improbable that Kansas will find irrigation, in many cases, more practicable. The results of the Massachusetts Experiment Station on sewage, now publishing, are looked for with much interest; the State has spent about one hundred thousand dollars on the subject. In such a village as Manhattan, sewage-disposal would be a burden, for the quantity would be small in comparison with the running expenses and cost of plant; for irrigation even, would require a pumping station.

"It seems to me that the first question for most of the towns of Kansas is the source of water-supply. With that question settled, the issue of river contamination can be more squarely met."

The next paper read was by Dr. Swallow, as follows:

#### THE SANITARY CONDITIONS AND NECESSITIES OF SCHOOL LIFE.

BY FRANK SWALLOW, M.D., OF VALLEY FALLS, MEMBER OF THE STATE BOARD OF HEALTH.

In discussing this subject it will hardly be expected that the writer will present anything new to the members of this convention with reference to the sanitary conditions of school life, nor that the different divisions of the subject will be treated exhaustively. The most that is intended, as the object of such a paper, is that general attention shall be directed to the importance of the subject, which may result in the near future, in some measures looking to a more efficient supervision of the sanitary necessities of our schools.

The State Board of Health will have done a good work, at the present stage of affairs, if it shall succeed in impressing upon school officers and teachers the importance of the subject, and in securing some proper legislation in the matter of school sites, plans for construction of buildings, and the various needed reforms so essential to the health of the children and youth now in our public schools.

School sanitation has hitherto received little attention, either from the general public or the law-making powers of the State. We have laws for text-books, for the qualification of teachers and superintendents, for the grading of schools as pertaining to the different subjects to be taught, etc., but almost nothing governing sanitation.

In the matter of mental training the fact seems generally to have been overlooked in school work that a sound body is essential to a sound mind; and as to the public generally, little is thought of the laws of health or the methods of preventing disease, as to children at school. A child or youth cannot be more seriously abused at school than to be deprived of the conditions which are absolutely necessary for its orderly development and health, and thus have entailed upon it a life of suffering, disappointed hopes, and premature death.

When we assert that human life and health are conditioned and governed by fixed laws, we are met by the general opinion that health and disease are matters of uncertainty, and when the child comes to its home from school, sick, because it has been exposed to deadly impurities, the parent is apt to attribute its condition to some arbitrary control of Providence, or necessity of fate, rather than to the violation of sanitary laws to which it has been subjected.

## SITE.

The school-house should be located so as to secure thorough natural drainage. This is the first and most important step in order to have pure air and comfort. Without a proper elevation, there will soon be found about the building, pools and slop-holes which are repeatedly filled with filthy surface-water and then dried up, contaminating the air with poisons which render perfect health impossible. Enough ground should be procured to afford ample play-ground for the pupils, and this, as well as the buildings, should be open to sunshine, away from marshes or filthy surroundings.

The space under the house should always be kept dry and free from the contamination of soil and air. Country school-houses, if without a cellar, should have air-spaces in the foundation, and whether the school-house be with or without a cellar, to provide against the incoming of surface-water, which will settle in pools under the floor, a ditch should be dug outside, and reaching below the foundation, in which should be placed drain tiles, leading to a proper place of discharge, after which the ditch should be again filled with earth.

## HEATING AND VENTILATION.

The proper heating and ventilation of a school-room presents the greatest difficulties, and yet are of the utmost importance and are mutually dependent. It is comparatively easy to build a house, and to provide for heating a given space, but the necessary supply of pure air, and how to procure it, and have it properly heated, are matters about which there is still formed an imperfect opinion. The people in general are almost entirely ignorant of the amount of fresh air which is necessary to secure the conditions of health.

The school-room should be of sufficient capacity to allow from 250 to 300 cubic feet of space per pupil. The air should be heated from 68 to 70 degrees, and this air should be constantly renewed at least every five minutes, or twelve times per hour.

The writer does not profess to be an expert as to the best methods for heating or ventilating; but he would if possible excite attention to the importance of the subject, and insist upon the adoption of some method for each school-room, which will effectually do the work. The temperature of the body should be evenly and properly maintained to secure perfect health, and this cannot be secured by the old, and still too often practiced method of setting stoves in school-rooms as direct heaters, and then trusting to opening the doors and windows to provide fresh air. To open the window or door, allowing a draft of cold air suddenly upon one side, or the unprotected parts of the body, is attended with great danger.

In case the stove *must* be used, it should be surrounded with a screen or jacket, so as to be made an indirect heater, for no other kind of heating than indirect should be taken into consideration for the school-room.

For large buildings, steam heating is probably preferable to any other method, but this requires a corresponding system for good ventilation. We think an excellent provision for the smaller country school-houses would be to build a broad box, say 12x20 inches, on each side of the room, which should extend from the side of the house to the outside of the roof; in these should be placed ventilators at the top of the room for the admission of fresh air, and at the bottom, or next the floor, there should be placed ventilators to carry off the carbonic acid gas, which settles at the bottom of the room.

To call especial attention to the above matters, as important to the sanitary con-

ditions and necessities of school life, and to disseminate a few fundamental principles and facts upon which teachers and school officers may act, is all that can be expected from the limited space allowed this paper.

But, in concluding under this head, we think it may be taken as a wholesome rule, that whatever atmosphere produces a disagreeable impression on the sense of smelling, is unfavorable to health. That sense was undoubtedly given principally to guard us against the dangers to which we are liable from a vitiated atmosphere. Who that has gone out of the fresh air into some of the over-crowded, ill-ventilated school-rooms which are to be found, and has been oppressed by the smell, can wonder that the squalid hue of the skin, the sunken eyes, the dejected feeling, and languid movements of many of the school youths and children are due to the breathing of the same air, again and again, which is loaded with contamination?

#### OUT-HOUSES.

Another very important matter is the proper location, construction and care for cleanliness of the out-houses or privies. The sad condition of these necessary buildings is almost an universal shame. No words can give the actual condition of many of these places. These so-called "conveniences" are too often constructed without any regard to bodily comfort or cleanliness. These buildings should be so inclosed as to be comfortable; good walls should be provided to them, protected by proper screens from wind and drift. There should, of course, be separate buildings for sexes; and these should not be exposed to view from the street, play-ground, or windows. They should always be kept clean and free from the stench, filthiness and nuisances, which are, alas! so common now to such places. Disinfectants should be provided, and well used. All prudery and false modesty should be laid aside by the teacher, male or female, in giving attention to this subject; and no rest should be given to the school board or people until the conditions of the out-houses are in proper sanitary condition, and not as they now too often are, the breeders and preservers of diseased germs, from which come typhoid fever, diphtheria, scarlet fever, and other malignant diseases.

The State would most certainly be justified in enacting laws for the erection and care of school privies, and not allow the thousands of children to be exposed to these infections. It shows not a great deal of wisdom to allow such sources of disease to exist, and then fight the disease. Let the out-houses be kept religiously clean and well disinfected, then we will not have so many contagious diseases to fight against, which so often originate with the surroundings of our schools.

#### WATER-SUPPLY.

The very large majority of the schools of our State receive their water-supply from wells, and, except in the larger cities, this must continue to be the case for years to come. Pure water is universally regarded as one of the most important features of sanitary work. There is so much general ignorance and consequent neglect on this subject that it deserves especial attention. The appearance of the water or the absence of bad taste or smell cannot be relied upon as any proof of its purity. And yet many of the wells from which schools receive their supply of water are generally regarded as all right until a bad taste or smell proclaims their foulness. The school wells are, perhaps, most of all neglected. They are left from year to year, often exposed to catch the surface-water, filled with decomposing and filthy matter, from the surroundings. Through a long vacation the well is not used, and is entirely neglected, though the water has become stagnant and not so healthful as that of a common pond; and yet the school goes on again, using the water. If it is but a hole in the ground and filled with water, it is deemed sufficient. It should be



known that the use of water from such wells will be to cause disease, and in many cases death. It is unfit to be put into any living stomach.

The well should extend down to a stratum bearing a supply of living water. It should be situated at a distance from all filthy surroundings, and be carefully protected from the incoming of surface-water. It should be often looked after, and kept perfectly clean. I am satisfied that the water used by many schools is the source of much unnecessary disease—disease that might be avoided if correct sanitary measures were understood and practiced.

#### MISCELLANEOUS.

Not to mention the need of proper and well assorted school desks and seats, so as to support in a natural position the different parts of the body, the proper relation and provision of light to secure the hygiene of the eye, exercise, cheerfulness, and other things necessary to the sanitary condition of school life, this paper may conclude by bringing to the notice of all having charge of schools the rule of universal appreciation in all sanitation, to *avoid filth*. Teachers should insist on bodily cleanliness. Filthy air, filthy houses, filthy water, and a filthy person and clothing, are the conditions under which all diseases are readily brought forth and disseminated. Diphtheria, scarlet fever, and other like diseases, which so often seem to originate in schools and prevail with such serious results, are *filth diseases*, and are traceable to the neglect of sanitary rules. The contagion originates in some kind of filth, and it propagates itself under favorable conditions so often found in or about the school-room. These diseases are not accidents. Filth is allowed to accumulate, and by its contamination spreads through the entire school district. Our large cities are not worse off in this respect than the smaller ones. Neither do the country districts escape, for these are often the most prolific sources, and disease spreads as rapidly in country as in city, and is often more terrible in its ravages. Moreover, when a case of contagious disease occurs in the schools it should be immediately reported by the teacher and physician. The pupil should be excluded from the school, together with all who are or have been inmates of the same house, and none of these should be permitted to attend school again until it has been decided by competent authority that it is safe to do so.

Let it be understood that a sound body is essential to a sound mind, and to secure this let the sanitary conditions of school life be well observed.

Prof. Canfield presented the next paper, and made the statement that the paper was prepared really by the junior class. It was a joint paper by the class on Local Government, which Prof. Canfield simply presented to show how clearly the class grasped the idea of the limits of power of the municipality.

#### THE PEREMPTORY PHASE OF MUNICIPAL GOVERNMENT.\*

PRESENTED BY PROF. JAMES H. CANFIELD.

In our early colonial history, municipalities consisted of numbers of people who had united for the purpose of securing political privileges, and social, religious and mercantile advantages not otherwise attainable. Each community was a political entity, and legislated for itself. Except in matters general and remote, it was little interfered with by the superior governing power in the mother country. Each was

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\*This paper was prepared by Jus. D. Bowersock, Fred. H. Kellogg, and H. F. Roberts, students in the State University, Department of American History and Civics, in connection with the study of Local Government.

self created, and established for itself some system of government. Practically, each was an independent political unit.

This state of things necessarily existed in a new, unsettled country, before the necessity was strongly felt for a centralized and general government, rising superior to the diverse interests of independent localities.

These early towns and villages, then, were of a political nature; each constituted a little democracy of itself. As there was neither State nor Federal Government, local government took the place of both. This made the old colonial settlements centers of political life and activity.

Cities and towns of the present day are very different. Now, except possibly in New England, the political units are the Nation and the State. The municipality, as such, has largely, if not entirely, lost its political significance, and has become a mere business corporation. In the settlement of the country, people collected in towns for the purposes of protection and self-government. At present the protection of the citizens is vested in the General Government and that of the State, and the political independence of localities has been formed to give way to the political necessities of the nation as a whole. Practically, nothing is left to modern city government but the financial and educational interests of its citizens, the proper sanitary condition of the community, and the general care of ways and means of commercial and social intercourse.

In fact, cities of to-day, formed as they are under general acts of incorporation, are nothing more nor less than mere business corporations. The common idea among people, that cities are political bodies, doubtless arises from the fact that when large numbers of people are congregated together their votes influence the politics of the county, and to a certain extent those of the State. This is true for example in such large cities as New York and Brooklyn. But these are really the votes of the people as citizens at large, not as residing within certain limits—their geographical conditions being rather accidental than otherwise.

The organization of modern cities originates in centralization about some point as a business center, selected usually for its natural advantages, such as a water-power, water-way, mining, or other facilities. Around this as a nucleus, population accumulates, and a city is formed. Soon the conditions of dense settlement, and the desire for advantages arising from this, create an entirely different status. Political and social changes arise, consequent upon the difference between the political and social necessities of a closely connected mass of people and those of the same people when widely distributed.

In the country, where houses are separated by large tracts of land, the ordinary acts and practices of one man do not necessarily and directly affect the comfort or well-being of another. Therefore, in the country, a man may live and do about as he pleases. If he lives in an uncomfortable or unhealthy way, he is simply his own worst enemy. But even in the country, when he does interfere with his neighbors, the law may interpose in their behalf. For example, a planter in Mississippi determined to turn his cotton plantation into a stock farm, because he thought it would bring him better returns. His neighbors, hearing of his intention, asked that he be prevented from carrying it out, because the grass necessary to the stock farm would spread over the adjoining plantations and unfit them for cattle-raising. The court sustained the petition and forebade the proposed change.

But in cities, where acts of omission and commission on the part of each man affect the convenience or comfort, or perhaps even the lives, of his neighbors; where men expect benefits which they cannot get in the country; where on account of density of population, health regulations are necessary, the case is entirely different. It is evident that some things must be required and some forbidden. These requirements

and prohibitions are determined by statute, (though officers are given some discretionary powers.) They are not left to the popular decision. The legislature, in passing general acts of incorporation, clearly defines *what shall be done*, and what *may and may not be done* by the government of a city. It leaves to the discretion of the mayor and council only the decision of *how* and when discretionary power shall be exerted. In nearly all matters, official action is entirely independent of the people.

It is only in what concerns the welfare of the community, however, that such peremptory power is placed in the hands of municipal officers. General matters, such as the legal rights of the inhabitants and the protection of their lives and liberties, are still secured by the Federal and State governments. The incorporation of a city does not change the relations of its citizens to the General Government. Their general political status remains the same as if they were living in the country.

The powers and functions of municipal corporations, then, are occupied simply in accomplishing certain results, which are ministerial in their nature, and affect only the locality in which they are exercised. Within certain limits, the mayor and council can act about as they please. It should be noticed, however, that the extent of the peremptory power which it is deemed safe to intrust to their hands had already been virtually decided by the common law. When general incorporative acts were passed, they merely formulated, in clear and definite terms, previous usage and custom. Our statutes refuse cities certain political privileges which municipalities in former times possessed, for the simple reason that cities, as political units, are not necessary to our government. But the mass of local administrative functions, which the common law has long vested in them as business organizations, remains intact.

Why should the mayor and council be given these peremptory powers? We have already noticed that cities are simply business corporations; hence, the mayor and council, who are really nothing more nor less than the business agents of the community, have only to see that measures are carried out that facilitate business, and promote the comfort and well-being of the citizens in their every-day life. This they must do, for it is only under these conditions that men will give up the freedom of individual action permitted in the country, for the restraints and restrictions of city life. The inconveniences of partial restraint must disappear beneath the vast number of advantages and comforts available in town.

It is evident that not all the inhabitants of a city or town are equally alive to the advantages of town life, or to the duties and concessions they owe their neighbors; or are equally interested in promoting the business of the community. In cities, as elsewhere, there is always a "don't-care" and a "no-account" class. Furthermore, there are always many people in a community who mean well enough, but who are ignorant or careless in details, minor in themselves, but which, when their possible consequences are considered, may threaten the property, the well-being, or even the lives of the citizens.

The only way in which the citizens can secure prompt and vigorous action on the part of the officials, in cases where their duty demands it, is by the elections. If they are willing to have their interests neglected, all that is necessary is to elect a mayor and council who will neglect them. On the other hand they have equal power to choose men on whom they can depend. The case is precisely similar to the relations existing between the management of a railway and the stockholders. The former may neglect or mismanage the business with which they are intrusted, and the only recourse of the latter is to discharge them, and select men who will do their duty. For example, in a city in Illinois, the mayor and council had for many years referred to the vote of the citizens the question of paving the streets—a ne-

cessity which had become imperative—thus hoping to shift the responsibility of a rather expensive undertaking, but without success. The business men becoming disgusted with the way the matter was being neglected, quietly went to work and secured the election of men whom they could trust to make the needed improvements without recourse to the popular vote. The movement being successful, the mayor and council took matters into their own hands, as was their statutory privilege, and put in several miles of paving, to the very manifest advantage of the entire population. It was the duty of their predecessors to have done this, but they failed; and it was only when a small number of energetic citizens took it upon themselves to work for a reform that anything was accomplished.

Let us consider some of the specific instances in which the peremptory power of the mayor and council, and their representatives the police, is most evident; remembering that by peremptory power we mean that power which in its exercise precludes debate—is authoritative, absolute, decisive, final.

Preëminent among the demands for this authoritative action are those of the public health. One of the most important of these is the right to quarantine. Is there anything more autocratic than the power of the mayor and council to prevent all persons entering or leaving the city? Yet this is absolutely necessary in time of epidemics. If it were left to a popular vote, much time would be lost, and in the meanwhile the contagion might be brought into the city. The right to isolate private houses in which contagious disease exists, to remove the inmates to the pest-house, or to compel general vaccination, are other forms of the same power. The mayor and council can also put a stop to all manufactures within the city which are dangerous to life or health. They can regulate the slaughter-houses and stock-yards. It is evidently necessary that the law should enable the city government to protect the health of the citizens against the encroachments of careless cattle-men and slaughter-house managers, by immediate and effectual action without recourse to suits at law.

Markets, meat-shops, and all food supplies, are likewise placed under the direct control of the mayor and council. This power, when properly enforced, is sufficient to protect the citizens against the sale of diseased meat, watered milk, and decayed vegetables, and is a very useful and necessary safeguard. The city is moreover empowered to provide for the inspection of streets, alleys, and lots, to see that they are in a proper sanitary condition, and to prevent garbage and refuse being deposited thereon. This is an extremely important provision, but unfortunately one that is not as generally enforced as it should be. Public sentiment, as well as a vigorous administration, should compel the city health officers to give such matters most careful attention, and the marshal should be required to enforce the ordinances with vigor. The small pay of these officials, and the fear of losing political adherents, consequent upon stirring up the wrath of certain citizens by rigid enforcement of this health rule, may perhaps be the reason for the loose attention generally paid to these matters. This is both unfortunate and dangerous. Unfortunate because of the general laxity of public opinion on the subject; and highly dangerous because of the fact that a few individuals of careless or slovenly habits may endanger the health of a whole neighborhood.

The regulation of sewers and drains is also one of the most important powers given to the mayor and council. It may not be generally known, but it is a fact that the statute permits the mayor and council, without consulting the wish of a single citizen, to put in a complete system of city sewers. So important does the State regard the health of a community, that this power, involving the outlay of large sums of money, has been placed absolutely in the hands of the city officials.

As to the general abatement of nuisances, the mayor and council have almost un-



limited powers. The city may condemn and cause to be destroyed, or to be put in a proper condition, any and all buildings whose sanitary condition threatens the health of its inmates.

Another important field for the exercise of peremptory power is crosswalks and sidewalks. In the country, a hole in a bridge may be half filled with a stone, and a stake thrust in as a "danger-signal," and it may be left in this condition for days, or even weeks, and no evil result, because of infrequent travel. In the city, a hole in the crossing, or a broken board in a sidewalk may bring about serious results if neglected a single day, or even an hour. In this latter case, peremptory power is needed, and the authorities should exercise it by compelling property-owners to keep the sidewalks in front of their lots constantly in proper repair. This may seem a hardship to owners, but it must be remembered that the benefits to be derived from living in a city must be paid for, and those who are not willing to pay, should not expect to receive these benefits and conveniences. In plain words, they should not live in a city unless they are willing to abandon the practices of the farm.

In the matter of protection against fires, the mayor and council have an almost unlimited peremptory power. They may forbid any manufactures tending to produce fires within the city, may regulate the storage of combustibles and lumber, may forbid the use of naphtha, benzine or other dangerous inflammable oils for purposes of illumination, and may even prohibit the use of candles or lights in barns and other buildings. The condition and construction of chimneys, smoke-stacks, etc., may be regulated, as may also the entrances to all public buildings. In these fire regulations the necessity for peremptory powers vested in the city government is recognized perhaps more readily, and acquiesced in more willingly by the inhabitants than in almost any other direction, because the fearful effect of a conflagration is sufficiently striking and manifest to seize upon the public imagination at once. As a matter of fact, however, fire regulations are not as necessary as those concerning health, because people are more careful in matters where carelessness may bring personal or pecuniary loss and injury upon themselves, whereas in things pertaining to the public health, the evil effects of negligence are usually not so striking, but are all the more insidious and dangerous for that very reason.

We have now considered the peremptory powers of the mayor and council in as far as they relate particularly to the health or personal safety of the citizens. Besides these, there are a number of general powers which pertain more to the convenience of the inhabitants and the improvement and welfare of the city as a whole.

First among these, perhaps, we should put general police regulations; and next, the power of the mayor to call on any and all male persons in the city between the ages of 18 and 50 to defend and enforce the laws. In cities of the first class, the mayor may also call out the organized militia within the city to put down riots, etc. The right to regulate the lighting of streets is also placed in the hands of the mayor and council. They can suppress all tippling, gaming, or other disreputable houses. They may supervise the weighing and measuring of commodities, and may appoint a weigh-master. They may provide for a system of water-works, to be under the control and management of the city, and this without recourse to the popular vote. This provision, however, extends only to cities of the first and second class.

It is clearly evident that in matters which have no political significance, but which affect more or less vitally the personal interests and welfare of the citizens, the mayor and council are given very general and ample powers, which they may exercise independently of the popular will. Theoretically, it might seem that the statute leaves authority in their hands which may become dangerous or may be exercised to the detriment of the community. Practically, as everyone knows, this is not the case. If anything, the mayor and council, fearing adverse public opinion,

are inclined to do too little rather than too much. Being citizens themselves, the municipal authorities recognize that the interests of the community, and of its citizens, are their own interests also, and common-sense usually regulates their actions.

If the question is one of great responsibility, or involves heavy expense, as in the matter of water-works, or sewers, the authorities may refer it to the people to ascertain their feelings in the matter. Where time is not an element, where there is no great and immediate danger involved by delay, and where the measure proposed involves great responsibility and pecuniary risk, it is often better that the city government should refer the question to the people for decision. But small matters, such as cleanliness and neatness, and in all sanitary matters, where immediate action is required, the mayor and council should never hesitate to act promptly and firmly within the line of their duty.

People are governed largely by public opinion, and few persons care to place themselves in opposition to what may be the sentiment of the majority of the community. In matters, however, where custom has virtually decided the general line of policy to be followed, it would be absurd to expect people to leave their business and settle them by a direct vote. This might lighten the responsibility of the city government, but it would bring on endless complications; and besides, almost the sole object of modern city organization is to relieve the people of responsibility in details, and place it with a few men of good business and executive ability. There are, to be sure, plenty of people who object to any policy which may interfere with their present convenience. These people are usually the minority in a community, and the majority gladly leave to the more concentrated power of the city government the enforcement of all general local regulations. It is this majority, in whose hands are the business interests of the community, and to their opinion, and not to those of a few obstructionists, should the action of the mayor and council conform. Their actions, however, must be regulated by a simple sense of duty to the community at large, never hesitating to do what is right for fear of giving offense. Following a sensible, progressive, and wisely economical policy, they should seek the highest welfare of the entire community. Temporizing and yielding to the cry of expediency may make things easier for the officials, but in doing this they are not fulfilling the letter nor the spirit of the law.

In conclusion, we merely repeat what has already been said: that cities are little more than business corporations; that people live in them for greater facility in the transaction of business, and hence, to make all currents of busy life run smoother, is the main function of municipal government. To accomplish this result, peremptory powers must be placed in the hands of the mayor and council; and it is on the judicious selection of men for these offices, therefore, that the character of city government in this country principally depends.

The following was the last paper of this session:

PERSONAL DUTY OF THE CITIZEN TOUCHING THE PREVENTION AND  
SPREADING OF COMMUNICABLE DISEASES: FROM THE  
STANDPOINT OF THE MOTHER.

BY MRS. A. L. DIGGS, OF LAWRENCE.

Coming down the stairway in one of our Lawrence public-school buildings the other day, my little daughter said to me, "Mamma, we march down these stairs every day, and keep step and keep our places in the line, and we would march just as slowly and keep time just as carefully if the house was on fire." I found that my little girl knew all the reasons why there must be strict observance of these rules, not only to prevent confusion and save time in the ordinary and every-day

experience, but also in order to prevent panic and disaster in the event of alarm. The faithful teachers attend to this discipline *every day*, not only to preserve order but to be in habitual readiness to avert possible calamity. In like manner, the well-informed and thoughtful mother insists upon the habitual observance of the essential hygienic practices in her household; she does not permit violation of health rules until some contagious and malignant disease makes its appearance; she knows that the proper time to effectually prepare for sickness is in health, and that always precautionary wisdom and preventive work are most valuable.

As to the several essentials of health—pure air, wholesome food, sleep, exercise, recreation, dress, avoidance of dust, and so on—there is sufficient information abroad, or easily accessible, if only there were a deepened impression as to the vital importance of their observance. If people would only put into every-day practice, faithfully, consistently, continuously, the knowledge which they already possess, there would be little need of spasmodic effort during the prevalence of serious disorders; but as Miss Ophelia said to St. Clair, "Laziness ruins more souls than you can shake a stick at." People go to any pains to learn of a specific remedy, forgetting that the best specific is *general habit*, and that the pound of cure hardly balances the ounce of prevention. There is really no excuse for ignorance for those who can read. Health rules are constantly thrust before readers of newspapers, the excellence of whose patent outsides *sometimes* atones for the editorial insides.

The task of the mother in directing the ways of her own home and her own family so as to be always in a state of preparedness against contagious disease is not so difficult. She can see that the food is well cooked, the house well ventilated, that there is no accumulation of decayed vegetables in the cellar; she can banish cumbersome, unwieldy carpets—those dangerous receptacles of germ-laden dust; she can see that the children's feet are protected from cold and dampness—all of these and other familiar health essentials she can enforce within the four square walls of her home. But how pitifully futile and inadequate are the labors of even the most faithful and vigilant mother if her intelligence and interest are limited by the boundaries of her own individual hearthstone, if her mental horizon is entirely defined by the line of her own domestic observations. The woman who does not expand from the mere domestic into the citizen cannot fill the measure of her personal duty to her own family.

There is a little morsel of truth in that bit of sentimentality, "The hand that rocks the cradle rules the world." It might be entirely true if the babies could always be kept in the cradles; but from the cradle to the school-room is but a little distance, and when the school-room is reached, the personal duty of the mother must then include a citizen's intelligence, a citizen's interest, and certainly should include a citizen's authority.

How exceedingly farcial is all the judicial attempt to define the relation of women to the State, the gigantic effort to ascertain whether or not a woman is a citizen. Outside the Dogberryism of legal classification, women—mothers—are of course citizens; and no class of citizens can possibly have a more vital, more universal, more direct interest in all of the doings and duties of citizenship than women to whom the crowning blessing and supreme responsibility of motherhood have come. Because there is no possible line of demarkation between the home and the community, between the individual and the State, it is therefore of vital importance that women should feel the responsibilities and assume the duties of citizenship. Of what avail is it for a woman to give all her effort and attention to the ventilation of her own house and the cleanliness of her own children, if those children must go directly into the foul air and unclean surroundings of the public school?

Contamination will seek and find the most carefully guarded child. Of what

avail has been the pure mother's-milk, if a little later death comes in the milk-can, or in food adulteration? Manifestly, the mother needs citizen's elbow-room. We shall have neglect of thorough sanitation until two things occur. First, there is a deepened sense of the importance of observing *every day* and all the time such health laws as we are familiar with. And second, until we have a more general and active public sentiment demanding sanitation. This latter we would reach much sooner, if sanitary intelligence and control and direction of the business side of sanitation were not in so large a measure confined to the busy, the necessarily absorbed bread-winning section of the human family. There is need that women should be more alert to see how they may increase and energize a popular sentiment, which will compel municipal action in the direction of health measures. Mothers should more generally realize that their duties lap over from domesticity to citizenship. Then, under the spur and impetus of such realization, women would use time, now insignificantly employed, in abolishing many disease-producing agencies.

The treatment of nearly every topic before this convention has brought out the relationship and dependence of these matters upon citizenship, upon either State or municipal action. Water-supply, drainage, food adulteration, State action concerning contagious disease—all these, it has been shown, can only be thoroughly and effectively dealt with through citizenship, and by citizens. One of the gentlemen of the convention said in discussion this afternoon, "It is of no use to develop sanitary science unless the State will give us the power to act in the interest of the people."

In looking at the question of "Higher Education for Girls" from the mother's standpoint, how shallow and witless seems much of the popular talk about it. Why, manifestly, if but one of the sexes can have the advantages of higher education—if there is not enough education to go round, then women, by all odds, ought to have the larger slice, for they most need that breadth of culture which the higher education gives. They need even more than men to have incorporated into their lives and characters all that the most generous and ample opportunity can give, no matter if some of the technique becomes rusty or obscured by after disuse. The *effect* of discipline remains, and is worth all it costs in that richness of mentality, in the ability to judge, to estimate, to be accurate, to direct and to advise, which it furnishes. Education is only valuable as it is assimilated and passes into character. Of all the scientific specialties, that of motherhood most needs general culture and breadth of training. Moreover, mental activity and *intellectual* life are great promoters and conservators of physical vigor, energy, and youth. Women age more rapidly than men after the school days are over, and one great reason is because they give up their intellectual life. It is traditional. It is expected of women that they shall stagnate and narrow—and they live up to such expectations. Not that it is desirable for women to be always post-graduating, or keeping up German or geometry; they may even forget so much that they could not pass a common-school examination, but the science and philosophy and mathematics may be applied to their larger opportunities as mothers and as citizens. "New occasions teach new duties."

Passing from these generalizations, there is one point upon which I wish to so fix attention that it may hereafter remain (with all here present) and take its rightful place beside the familiar but important hygienic essentials. It is with reference to the element of fear in relation to the spreading of communicable diseases. Doubtless, the thought of each hearer will immediately revert to some fact or statement which will illustrate and coincide with this point. Fear of disease invites its



attack, and yet the very persons who are all well posted as to the deadly effects of terror, of the powerful part which the mental condition plays during the prevalence of a malignant disease, are entirely careless as to their behavior and conversation, both of which augment and aggravate the popular terror. Instead of maintaining a calm demeanor, they betray excitement, and thus immeasurably increase the danger. They create panic abroad and pandemonium at home. If diphtheria takes away a bright, lovely child, everybody sympathizes loudly and goes to the funeral in token of respect. It is in just such times of prevalent malignant disease that the mother has need of all her self-poise in the presence of her family. There should then be no violent departure from the regular order; no bringing out of sulphur and molasses; no special season of prayer; no frantic appeals to the Heavenly Father to spare the darlings of the hearthstone. If the house and the life have been well-ordered, the preventive measures and the prayerful attitude have been steadily maintained; and if they have not, it is an ill time in the presence of the disease to rush and crowd to make up for neglect. The peril cannot be averted by excited measures. If there is ever a time when conversation about disease and death should be tabooed in the presence of children, it is during the prevalence of an epidemic; and yet it remains true that almost constant reference is made (even at meals, where the atmosphere and talk should be cheerful and aid digestion) to the prevalent danger to the sick and the dying. Then it is that some mothers flutter like hens and hover over their younglings, cautioning them not to eat this, not to go there, not to do that, until the children are saturated with fear, and are in prime condition to reproduce the symptoms which have been photographed upon their imagination. If it is a throat disease that is prevailing, then there is a perfect congestion of fear and focusing of imagination towards the throat. All the robust barriers of calm, equal circulation, are broken down. The enervated state of the nerves and muscles is powerless to resist or successfully battle with infection. Ah, mothers ought to be afraid and ashamed to betray the weakness and incompetency of fear. If the disease is so general and so serious that the schools must be closed, then let the caution and the tenderness of the mother be employed in interesting and diverting the children's attention from the cause of their being out of school; make the time a recreation and a holiday. The wise mother will immediately check the garrulous neighbor who drops in to rehearse all the painful details of the last illness of some victim of the disease, for if the painful story goes on, the fascinated children gather about; they hold their breath to listen; the irregular respiration disturbs the various functions, and disease germs find lodgment and do the fatal work they could not do with the child's system in a perfectly normal condition.

Ever since my own thought was turned to the consideration of this important point, I have observed how generally, and habitually, and recklessly people talk of the dreadfulness of sickness and death; people who do know better, but are simply careless. All this, which is true concerning malignant types of disease, is, in a measure, true of all disease. The mental state may somewhat attract or somewhat resist disease. It is a great safeguard to cultivate cheerfulness and confidence. There is a great deal of health in the universe.

I have tried to emphasize three points. First, the need of attending systematically and constantly to the accepted health rules, with a view to being always prepared for the exceptional. Secondly, I have argued that the duties of motherhood include citizenship, and necessitate breadth of culture, to the end that women may deal intelligently and effectively with the causes and remedies of disease. Thirdly, as to the relation of fear—the part which the imagination plays in sickness, and the consequent importance of avoiding the stimulation of nervous terror.

The following resolutions were offered and unanimously adopted :

*Resolved*, That a vote of thanks be tendered to Prof. F. H. Snow and Judge J. P. Hindman for the able manner in which they have presided over the deliberations of this, the Fourth Annual State Sanitary Convention; and to Rev. W. W. Ayres for his faithful attention and valuable report of the proceedings of the same, as secretary.

*Resolved*, That this convention extends its thanks to the press of the city, for the space given to the proceedings of the convention, the program, and the call for the convention.

*Resolved*, That special thanks be tendered to the quartette for the most excellent music furnished at different sessions of this convention; to the citizens of Lawrence: to the Faculty and students of the University for the great interest they have shown, not only by their presence at its sessions, but their exhibition of sympathy for the cause of sanitation.

*Resolved*, That we hereby extend our thanks to the officers and members of the Y. M. C. A. of Lawrence for the use of their hall, and for the many courtesies rendered during the opening session of the convention.

Dr. Redden presented the following communication from Prof. Geo. T. Fairchild, President of the Kansas State Agricultural College, in reference to holding the next Sanitary Convention in Manhattan:

"DEAR SIR: I am directed to express to you the cordial good-will of the Faculty of the Kansas State Agricultural College, and assure you of the interest they manifest in sanitary progress; and should the Sanitary Convention find it convenient to meet here next year, we cordially offer every facility that the College affords. We hope most earnestly that the convention next year will be held in Manhattan."

Also a letter from Dr. Roberts, of Manhattan, on behalf of the physicians and citizens, extending a cordial invitation to the Sanitary Convention to meet in Manhattan in 1890, and pledging that they will make said convention a success in every particular.

On motion, it was unanimously resolved that when the convention adjourned, it would stand adjourned to meet in Manhattan, in December, 1890.

Brief remarks were then made by officers, delegates, and members of the convention.

The Y. M. C. A. Hall, in the city, and the Snow Hall, at the University, were crowded with earnest and attentive listeners during the night sessions; and Snow Hall was well filled during the day sessions by the visitors, citizens, members of the Faculty, and students of the University; and all seemed interested in the teachings and principles of sanitary science.

The sessions of this convention will be very pleasantly remembered by all those who had the privilege to attend them.

On motion, the convention then adjourned to meet at Manhattan, in December, 1890.

After adjournment, a short time was very pleasantly spent in social conversation.



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